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Bob Cooper's

JULY 15 1998

SatFACTS

MONTHLY

Reporting on "The World" of satellite television in the Pacific and Asia

IN THIS ISSUE

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is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd. This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no long define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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COOP'S COMMENT

July 15, 1998

Some unfinished business.

On this page in June we addressed an open message to Michael Wagg (whom we mis-addressed as Mark Waggs - but he knew whom we were citing) asking why Optus in their wisdom has elected to approve the UEC 642 for payment with the Commonwealth (RTIF) subsidy but not a second competing model from Panasonic. In the intervening 30 days we have located a 54 page report from Optus engineering personnel to Dr. Wagg listing faults with IRDs tested for RABS, which we highlight on page 22, here. We also went to the office of Senator Richard Alston to seek clarification of this question. We did this after being advised Optus is being called upon for answers by the Government of the day. The answer we received from the Department of Communications and the Arts was:

"We are consulting with Optus on the question of which decoders should be eligible for a Networking the Nation subsidy and have not yet made a final decision. We are currently waiting for further advice from Optus on this issue, and we anticipate a decision soon."

The date on this response was July 3.

Is the RTIF subsidy being misapplied by Optus? If yes, who is responsible for this decision? If Optus has real reasons why they have approved two competing IRDs for RABS but will only allow RTIF vouchers for one, let them explain those reasons to the industry. The longer this matter drags on, the greater the suspicion of something being covered up. Dr. Michael - you are ignoring this issue at your own peril.

...

The envelope carried a message - just in case the recipients thought it to be junk mail. "Inside: Important message to former Galaxy subscribers." Finally, something in writing from Foxtel detailing how ex-Galaxy subscribers can become Foxtel satellite viewers. The newest target date to re-encrypt the present FTA Austar service is August 1 give or take a few days. What Foxtel wants is payment from July 1st for each ex-Galaxy home agreeing to continue with the present "interim" service. They also want satellite subscribers to agree to grant Foxtel access to the equipment anytime within a 24 hour window requested, to agree to be converted from satellite to Foxtel cable (at Foxtel's expense) at any time Foxtel decides, to not record Foxtel satellite signals, to not connect a second TV to the IRD (they will allow you to rent a second IRD). The "contract" appears to be onerous and already people are heading to (Australian) Consumer Affairs.

...

Audio (or data) only IRDs. They exist, but cost more than the consumer version television plus audio (and text) versions. Users of new Aurora platforms that have no interest in video content are being misinformed when told they can save money with a non-video IRD. This is one case where paying for something "extra" you do not want or need will not cost you more money. Yes, you can source audio-only IRDs. You will not like the price differential.

Just in our door for testing - the non-RTIF-favoured Panasonic/Comstream IRD approved by Optus for RABS. We'll try to figure out why Optus doesn't like it in August.

In Volume 4 ◆ Number 47

Departments

-ON THE COVER-

It started with our "paper clip" photo (p. 18, June). And got worse. For UEC. Is the UEC 642 somehow flawed? The evidence suggests it may end up being the "cleanest" IRD available in the world ... if it can get through the present storm. We take you inside the controversy starting on page 6.

L E T T E R S

Up Your Arse, Cable

Editor's note: The following e-mail was received by Av-Comm's Garry Cratt during the recent great free to air tune-in as Foxtel, Austar and Optus were FTA on satellite.

"YES GARRY - Christ ... rush me the latest 40 foot dish, digital bloody analogue bloody everything else with a rotator (must have a rotator) receiver. I want everything, all CATV programmes for FREE. Yes, give me Optus, Foxtel, bloody Austar. The hell with cable. I have the land (for now) pending MABO claims on my backyard sacred bloody site. I am on the way to the doctor now (without delay)!"

BR/Dave

To which we add:

"Foxtel PAS-2 digital bouquet on 60cm dish produces 11 dB carrier to noise and while the signal strength reading is 1.5 blocks on the Pace receiver, the quality is full-blocks, pictures P5!"

Bruce Barnett, Wanaka, NZ

"With a 450mm Winegard dish (ex-Sky) sitting on the ground lashed to a larger 760 Winegard, using Sky NZ LNB, 4.8 dB carrier to noise. On 760mm Winegard dish, 8.2 dB. On 2.4m Andrews dish with 0.7 dB Gardiner, up to 12.8 dB. "

Robert Skilton, Te Anau, NZ

Alas, all good things eventually come to an end (p. 18).

47 Countries and Counting

"Island Cable Television, Inc. is a small independent CATV system operating in the Republic of Palau. We have over 1,000 subscribers and a total of nineteen channels at this time. Ten of these are downlinked from satellite (9 on PAS-2, 1 from Intelsat 177) and plan to purchase a new dish for Palapa C2 as well. We use .500 cable as our main trunk and distribution with RG6 drop lines. The amplifiers are Magnavox trunk and line extenders functioning to 330 MHz. Our video format is NTSC and we have approximately 36 miles of plant. Thank you for SatFACTS!"

Norbert Villanueva, General Manager
Island Cable Television, Inc., Koror, Republic of Palau

We are pleased to have you as a subscriber and thank SPN for bringing us to your attention, the '47th country' to receive SatFACTS.

17 Degree Gardiner

"My crazy mate is distraught at having lost SPN. It seems he has changed his LNB from a 17 degree Chaparral Sidewinder to a 17 degree Gardiner. Everything else works as before and as a test he can still get the RFO bouquet. And he has a circular feed appropriate for 701. Any clues?"

Derrick Wisking, Greenhill, South Australia

Two. Put the Sidekick back on and be very certain your RHC (cross pole) nulling is spot on. Unwanted signal

PROGRAMMER
PROGRAMMING
PROMOTION

UPDATE

JULY 15, 1998

SPN (Sports Pacific Network; SCPC on Intelsat 180, FTA) is doing first live remote broadcast with major coverage of Micronesian Games July 31 to August 10. Events will broadcast live from Palau 13 hours from 0000UTC daily. SPN is to be congratulated for maintaining their pace of growth and development! Information from tel + +674-444-3895 (3896).

CNN on PAS-2 vertical; why? PanAmSat, faced with transponder bandwidth crunch, would like CNN to speed up their conversion to digital so as to free up bandwidth now gobbled up by CNN's analogue service. CNN is resisting, has been told it can only stay on PAS-2 analogue if it shifts to opposite polarity; a move scheduled for July 14th (3900/1250Vt, Oceania beam - not Pacific Rim).

Perhaps it is something in the water? Australia's TVSN (TV Shopping Network) has gone into Voluntary Administration because the corporate directors believe, "*the company is likely to become insolvent*." Chartered accountants Ferrier Hodgson, the same firm appointed to dismantle Galaxy/Australis, is handling the details. TVSN claims it has been losing large sums of money in Asia, and wishes to "rationalise" its way out of existing contracts there before the firm is dragged into corporate bankruptcy. Creditors of record as of July 2 will not be paid until the Voluntary Administrator study is completed - scheduled for July 31st. TVSN is presently on PAS-2, PAS-4 and As2 in addition to various Australian bouquets.

Hallmark has launched PowerVu service on ApStar 2R (3720Vt; 19.510 and 3/4) with twin feeds in NTSC and PAL plus two growth slots to be used by the Kermit Channel later this year. Cable TV affiliates are being told to use SA D9225 with every likelihood service with be CA shortly. Future of ongoing AsiaSat 2 feed? Hallmark advising affiliates to get Ap2R equipped now because they plan to shut down the As2 service this month; perhaps as early as 15th.

Plus 21 advising interested viewers to adult service their plans have changed; will not be using Viaccess conditional access system after all. SA PowerVu is now installed at uplink, receivers scheduled for July / August delivery with September 1 new start date. Service was to be on ApStar 2R (3787Hz subject to modification to suit PowerVu); contact Ranjit Singh at fax + +(India) 91-172-653-014.

NHK World in FTA format (both analogue and digital) drawing complaints of abbreviated service hours from users. Hotels in Thailand, elsewhere are complaining their Japanese guests don't like new service. There is an option: Subscription to NHK Premium which is scheduled to be longer hours and different in content from NHK World shortly. Individual home subscriptions? Contrary to earlier reports, they are possible in region of US$20-40 per month. Ask for application form (Joho NHK Premium) from fax + +81-3-3485-8677 or email premium@nhk.jn.co.jp.

GMA decision to abandon Palapa C2 in favour of Agila 2 is being revisited by station management. The odds are long they will return to C2 but at least they are not totally dismissing idea. Pressure? Contact Roxanne J. Barcelona, VP, GMA Worldwide Inc. at (email) roxanne@gmanetwork.com.

Bonneville International, technology arm of Mormon Church, has 9 MHz spectrum space reserved on Orion 3 (C-band). Bonneville routinely creates feeds to Mormon Church sites world-wide and there should be some system sale / install business out of this new service.

NBC bouquet PAS-2. With start of National Geographic Channel Asia July 1, major shuffling of programme channels; some receivers quit and require erasure of previous memory and reloading of new channels. CA? Not yet, perhaps soon.

RAI Side-show

"RAI International has been broadcasting telephone numbers to sign-up for Optus Vision and the RAI service. The numbers given are 61-2-9775-9220 and 61-2-9775-9401. We have tried calling repeatedly and get no answer. We watch RAI on the European Bouquet as well as on PAS-2. Lately we have found the picture falls apart. Don't tell me that Optus Vision or Foxtel have bought in and now you have to pay to view programs? We have a 3.6m Paraclipse dish, Nokia digital and Echostar analogue receivers. Here is hoping that after all of this expensive equipment, RAI will be left free to air!"

Connie & George Orioli, East Geelong, Vic, Australia

Pay TV Non Event in Tasmania

"Congratulations on the excellent report in June SatFACTS on the status of the pay-TV industry in Australia. Here in Tasmania we average 3 calls each day asking for pay-TV. People who have moved here from the mainland are absolutely amazed that we are forced to charge them nearly $3,000 to be able to receive pay-TV. East Coast Television operates an MDS service in Hobart with no more than 2,0000 subscribers in a capital city of 100,000 residents. Hobart is a difficult area for MDS due to topography and satellite would have been the correct technical answer. Launceston, where we are located, has 80,000 residents. What can you tell us about the small advertisement appearing on page 31 (June); Down to Earth? If this is for real, a $20 a month fee for 10 or 11 channels would be a solid seller here. Tasmanians have been promised so much with respect to pay-TV, they are now untrusting of the entire subject. Pay-TV is a non-event here."

Brian Watson, Technical Director,
Western Video Pty Ltd, Launceston, Tasmania

SatFACTS has acted as a "mail forwarder" for the DTE people and our knowledge of their plan or the status of the project is as much a mystery to us as you. We can report more than 100 responses to the advertisement; all have been sent on to the DTE address we were given. As for high pay-TV install charges, $2,000-plus fees for satellite are not that uncommon in rural areas.

Pay TV Subscription

"I am interested in subscribing for the pay-TV services. My SK888 IRD came without a CAM. Does anyone know where I can locate a CAM for this receiver?"

Antonio De Freitas, Coolangatta, Qld

Conditional access modules (CAM) are dangerous to source as they are often specific to a service or format. Try Nationwide Antennas at (61-0) 7-3252-2947. For Nokia receivers, Irdeto CAMs for 9200 and 9500 versions available from UK at fax ++44-7070-716504. Latest Nokia software is promoted on http://www.dominance.net/overflow.

NBC Lock Out?

"Having problems with NBC since Geographic started; are we being locked out?"

Rolf Lenhart, Wollongong, NSW

Try reloading the bouquet from scratch. One rumour is the NGS channels will go CA, perhaps by end of July but CNBC will stay FTA. Note CNBC has begun carrying sport and new non-business programming.

HARDWARE EQUIPMENT PARTS UPDATE

JULY 15, 1998

Russian sources have issued revised Proton (launcher) schedule covering period through end of 1999. There are surprises. PAS-8, now much anticipated because of probable Foxtel use for DTH to Australia, is scheduled for October 9 or 29th - depending upon who's list you read. The last of the Gorizont birds (they call it #33) which we reported was going to be grounded and not launched is now back on with a January 1999 schedule. Where will 33 go? They are not saying. However, they do plan Express K1 to 90E (2000), Express K2 to 53E (2001) and Express K3 to 103E (2002). Other launches of interest to Pacific and Asia - GE1A to 97E with 29 Ku transponders in May 1999 and Express A3 to 96.5E sometime during 1999. What is more interesting is what is missing: No sign of a Proton launch slot for AsiaSat 3R on the list (AsiaSat when asked about this tells SF they still expect to launch March 15, 1999; perhaps somebody failed to tell the Russians?).

ChinaStar 1 (87.5E) first spotted in NSW (David Leach) July 4 with typical Chinese programming on 3889/1261Hz (audio 6.6). Subject to launch success, a bigger, stronger target scheduled over next 30 days will be SinoSat-1 pointed to 110E with 24 C-band and 14 Ku on board. This satellite reportedly has wide footprints capable of serving large areas of Asia and we should not be surprised to learn there is coverage south of the equator as well.

SA D9225 potential power supply problem. If receiver acts strangely on power-up (difficulty locking, settling down), check +5v power supply line which could be going high (to as much as 7 volts). Solution is component replacement in Astec Custom Power (supply) which is subassembly of IRD. Contact SA or if in NZ, try Neil Ellis at (0)7-576-7876.

Indostar S-band satellite at 107.5E footprint map finally available (see p. 31). Next problem: Hardware for the dish. S-Band feeds are available from ADL (http:www.thegrid.net/adl) including deluxe RP1 CP400CKU-S which creates all three bands including RHC, LHC + vertical and horizontal from C-band. For S-band LNB, try California Amplifier through their many distributors in Pacific and Asia. Footprint projected coverage suggests northern half of Australia, New Caledonia will have access to service with 3m or smaller dishes. There are five transponders, operating between 2.520 and 2.670 GHz, linear polarisation. This note: Insat (Indian) S-band operates with pair of LHCP transponders +/- 2.600 GHz while Arabsat used 2.540 and 2.655 GHz with linear polarity.

Horse/dog racing service Sky Channel in Australia is scheduled to become a part of Foxtel and Optus cable TV packages September 5th; inclusion in one or more of the satellite packages has not been confirmed. Using slogan of "*At Home on the Track*," the new service will be 13 hours per day with thoroughbred, harness and greyhound racing originating at venues from NSW. Queensland, South Australia and Tasmania. The service is being given to cable operators without cost and will be a part of the "basic" service channels available to cable subscribers.

NBC Asia (CNBC) has now moved headquarters to Singapore; new contact numbers are tel ++65-326-1188 and fax ++65-223-0020.

Measat with two satellites in orbit plans use of 148E Ku portion to create new DTH packages for Philippines and Taiwan using spot beam centred on each country.

Two Filipino orbit locations, 151 and 153E, have been awarded to firm called Telesis which plans DTH service from existing or new satellite for Philippines.

German DF1 home DTH package has gone off air. Service needed 2 million subscribers, attracted just over 100,000 and used Nokia d-box IRD.

Power Supply? You've got to be kidding!

SWITCH(ed) MODE POWER SUPPLY is latest hurdle for Optus

The "power supply" is that portion of an IRD dedicated to creating operating voltages for the circuitry. Power supplies begin with mains voltage (220-240 volts AC) and magically turn it into several much lower voltage direct current (DC) sources. ICs and individual transistors within the IRD which process the L-band input signals originating at the satellite dish typically require 15 volts or less of DC to function. The latest family of single-chip ICs created for IRDs function on DC in the region of 3 volts.

Turning AC mains voltage into a transistor/IC required DC voltage involves reducing the mains voltage, converting it to DC and regulating the DC to a very precise level (such as 3.1 volts). As the DC operating voltage for transistors and ICs becomes lower and lower with each new family of devices, the precision control of the operating voltage becomes more critical. An IC design that operated at a voltage of 30 volts a decade ago was quite happy if the voltage was between 27 and 33. An IC designed for 3.1 volts today may malfunction if the operating voltage climbs above 3.2 volts.

All power supplies generate heat. When 240 volts AC is power supply reduced to 3.1 volts DC, there are inefficiencies in the conversion process. An IRD that requires 30 watts of AC power to operate has a 100 watt power supply in it simply because 70% of its capacity is going to be lost to circuit inefficiencies. And the 70% (or 70 watts in our example) does not simply disappear; it becomes heat which turns the power supply portion of the IRD into a metal container "heated" by the equivalent of a 70 watt light bulb. If you could somehow improve the efficiency of the power supply and reduce the "power lost" in the conversion process, the IRD would operate cooler and cause less stress on circuits from heat build up.

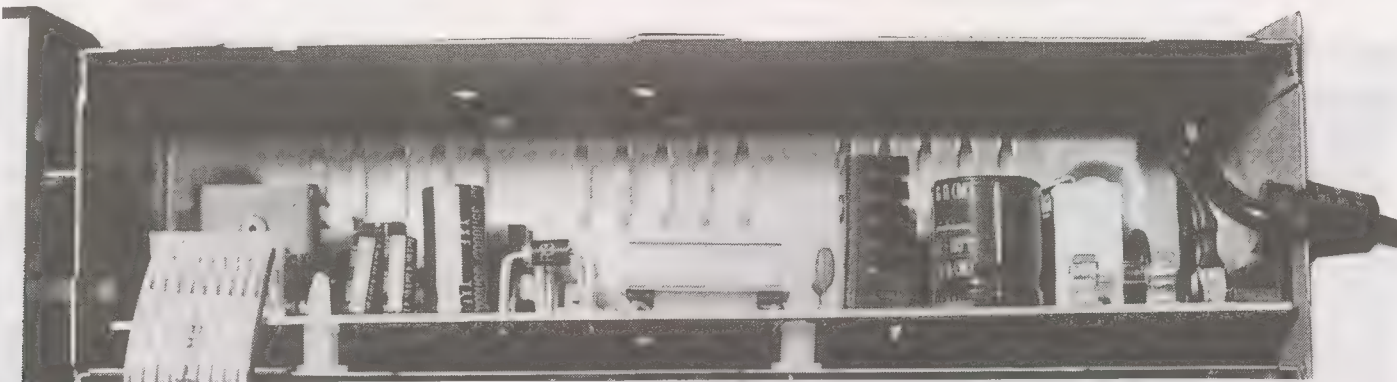
Power supplies are uncommonly common, not a controversial subject. If you set out to find fault with an IRD, the power supply is the last place you would look for design misadventure. The UEC 642 is under attack by people who believe the power supply is somehow a mistake and a symptom of even more problems.

Officially - not a mistake. Safety specs require a minimum of 6mm air space between fuse (holder) and (top) casing. Nominal spacing on 642 is 12.7mm or more than twice the statutory requirement.

Switched-Mode Power Supplies - Quick Summary

The switched-mode power supply (SMPS) developed during the late 1970s in response for needs to reduce the volume (physical size) and increase the efficiency (percentage of total power that could actually be used) of mobile equipment. Generally speaking, SMPS is attractive when there is a steady "load" (power draw) of 75 watts or more. Efficiency of an SMPS is typically 75% or better, an older style "linear" power supply (LPS) typically 30%. Additionally, SMPS is preferred where the input line voltage (from the mains source) is subject to variations (such as one might have with a gasoline or diesel generator at a remote site). SMPS maintain output voltage regulation even when the input source is badly "filtered."

There are disadvantages to SMPS as well. A linear supply does all of its voltage creation and regulation at the mains input line frequency (50 or 60 hertz). The SMPS upconverts the line frequency to a radio frequency (such as 50 or 100 kilohertz) which means right there in the power supply is the potential to generate and radiate RFI (radio frequency interference) that can be troublesome to radio (or TV) receiving equipment nearby.

The SMPS uses fewer overall component parts than a traditional linear power supply, but the selection and interrelationship between those parts is several orders of magnitude more critical. SMPS designs are "more elegant" and far more difficult to trouble shoot than traditional linear supplies. SMPS designs typically have no "mains transformer" although transformer-like choke and filter devices do appear in the circuit.

SOURCE of controversy - UEC 642 switched-mode power supply (top) nests inside of shielded compartment (to reduce RFI). Comparison - D7 MediaStar supply (below) looks more traditional with twice parts count of UEC 642. Note D7 placement of fuse holder and AC mains tie points at bottom of power supply compartment; over 45mm below safety-point at top of case.

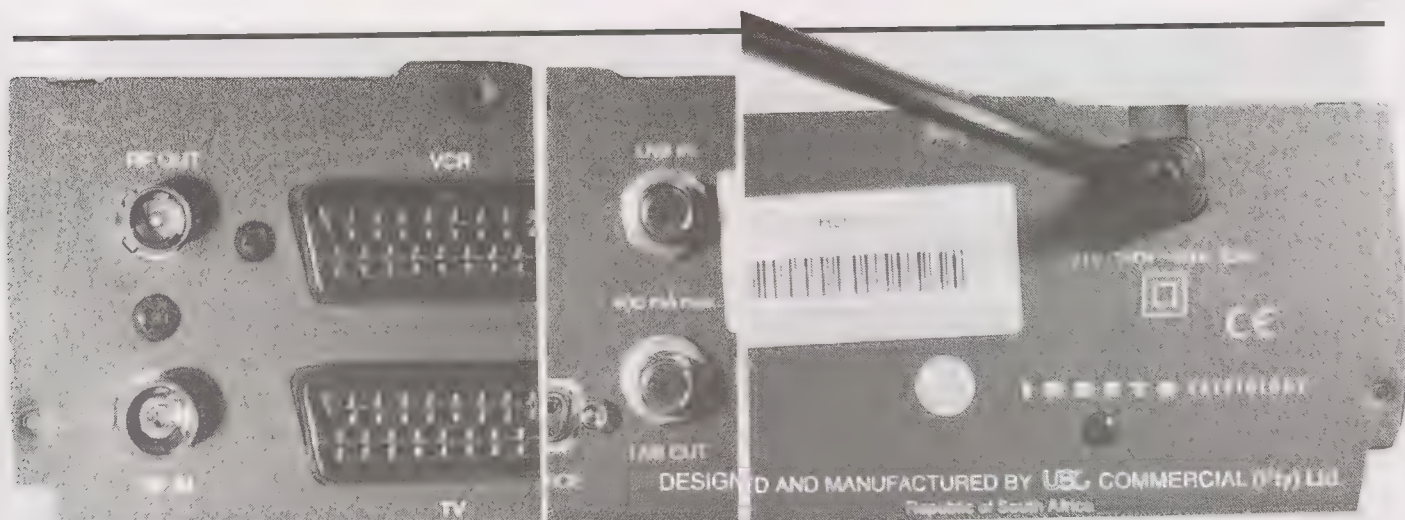
SatFACTS for June 15th published a photo of the 642 (p. 18) with the protective top cover partially lifted, a metallic paper clip protruding through ventilation slots and directed towards the 240VAC mains fuse which is located just below the cover slots. The implication was, "this is a safety matter." Product safety is one of several areas of concern to (Australian) authorities charged with overseeing the flow of (consumer) electronics in the marketplace. Not unexpectedly, UEC responded to our report citing both the mandatory technical specifications and the level of 642 compliance. Russell Futter, UEC Quality Manager, told us, "(The) *clearance distance between the primary side of the power supply and the outer case* (typically fuse and holder) *requires a clearance distance between the primary input side and the casing of >6mm. In the 642, the distance between the lid and the fuse/fuse holder is nominally 12.7mm.*" In other words, the 642 complies with the standard and adds a 112% "safety margin" as well.

End of issue? Not quite. UEC, after seeing the photo in SatFACTS, has decided they will add a new "fuse shroud" to the power supply; a cover that will further protect a consumer from coming into direct contact with the AC mains voltage. 642s with the shroud will now be additionally safe from accidental contact with the mains AC voltage. And none of this has anything to do with the attacks that have surfaced within Australia against the 642 power supply.

Switched-Mode versus Linear

As summarised at the bottom of page 6, the advantages to using something called "switched-mode" power supply (SMPS) design outweighs the disadvantages. Virtually all existing IRDs use the SMPS approach; no, UEC is *not* unique in this respect. The primary operational disadvantage to the SMPS approach is the potential for RFI (radio frequency interference).

RFI is a recently adopted initiative of the Australian Communications Authority (ACA) under the broad title of EMI (Electro Magnetic Interference). For our purposes here, EMI and RFI will be used interchangeably. The concept of regulating EMI is simple enough to understand; any consumer electronics product capable of causing interference to another piece of equipment must meet "unwanted, spurious emission standards." AS/NZS General Emission Standard 4251 is the reference.

Australia has adopted a procedure to determine electromagnetic compatibility (EMC), the ability of two or more products to operate in close proximity without interfering with one another. All satellite IRDs in manufacture prior to January 1, 1997 have until January 1, 1999 to comply with the new regulations. Products first introduced to the market after January 1, 1997 are required to be "C-Tick" certified prior to going to market. "C-Tick" is a sticker which products meeting the EMI/RFI/EMC standards and procedures are authorised

Interference can exit (radiate from) an IRD in several ways. Unwanted signals created inside the IRD can escape through the remodulator (RF output) or (TV aerial) input sockets (left). Or through any of the SCART or RCA or data port connections on the rear deck. And, through the mains power lead (right). Additionally, interference created within the IRD can "leak" through the container (housing).

to display in a prominent location. The Australian Communications Authority has the legal power to remove non-complying products from retail shelves. Non-compliance would include failure to have C-Tick approval.

Before a satellite IRD can apply for C-Tick approval, the manufacturer or importer must certify the unit's ability to meet or exceed the EMI/RFI/EMC mandated "interference levels." To support such certification claims, the manufacturer or product importer must submit the item for testing to a "recognised testing agency." Claiming of adherence to the published standard is not adequate; the manufacturer or importer cannot simply self-certify compliance. Certification can be done outside of Australia as long as the testing facility is recognised for its adherence to international testing standards in this field, or it may be done within Australia by one of several commercial firms with recognised standards testing ability. **(1)**

All of this pointed to a potential problem for the UEC 642 IRD because shortly after the first units were received in Australia late in May, it was noticed there was no C-Tick approval sticker on them. Remember - failure to comply with the regulations allows the regulatory body in Australia to "impound" a product and stop its further distribution until certification is obtained. In a letter to SatFACTS dated July 2, Russell Futter of UEC Commercial (Pty) Ltd. wrote:
"*C-Tick registration. This issue appears to be getting far more attention than I believe it requires. In short, between Nationwide Antenna Systems and UEC all of the requirements to place the C-Tick mark on the product have been met and approved by the Australian Communications Authority. There are no outstanding issues on this subject.*"

Translation? Perhaps - *perhaps* early distributed units slipped through without the required certification. Even this is not evident from the paperwork trail provided to SatFACTS by UEC (including documentation from well known European testing agencies dated as early as January 13, 1998) because the 642 is a successor to earlier Australian available 520, 630 and 635 models. Remember products already in the marketplace prior to January 1, 1997 (as the 520 and 630 were) have until January 1, 1999 to comply. And as Futter points out, "*One of the basic requirements from Optus Communications was compliance with ACA regulations. C-Tick was part of our project from the beginning.*"

Remember that one of the disadvantages of a switched-mode power supply is an inherent ability to generate unwanted RFI/EMI. You can quickly perform your own test of SMPS unwanted radiation. Take a small AM + FM portable radio, set it to AM and tune it to an unused (no radio station) broadcast band dial setting in the region between 700 and 1,000 kHz. Turn the volume up and lay the handheld radio on top of the IRD case with the IRD operating. Move the radio around over the case listening to the AM radio for signs of squeals or squawks. With the radio directly above the power supply section of an IRD, if you hear unusual noises (including cyclic clicking), the SMPS is generating and "leaking" interference. These unwanted noises will cluster stronger on some frequencies than others, and there will be "hot spots" on the top of the IRD case. None of this is desirable.

The SMPS is only one possible source of EMI/RFI within an IRD. The remodulator is another and in fact this segment of a satellite receiver has a purpose built "radio transmitter" inside, designed to allow the user to

1/ Testing fees for IRDs start in the range of $A1,900 and go up according to laboratories contacted by SatFACTS.

UEC 642 remodulator output (left) displayed on Promax MC-944 test instrument at SatFACTS. We did locate "spurious" emissions several TV channels lower than the specified output channel (see spectrum analyser display, right) as well as inside of the L-band (1300 MHz) region but were they strong enough to be considered a fault? See text.

view the processed output of the IRD on a television receiver.

The ACA has established a maximum permissible output level for the remodulator; the same maximum RF level also applies to VCRs and analogue satellite receivers equipped with a remodulator. It is *possible* the first thousand of so UEC 642s delivered to Australia did not fully comply with the remodulator standard of ACA. *Possible* - but not proven. The question arose when someone outside of Optus brought the matter to the attention of a high level Optus engineering section head at the same time SatFACTS was reporting our own measurements to UEC's Futter (see above).

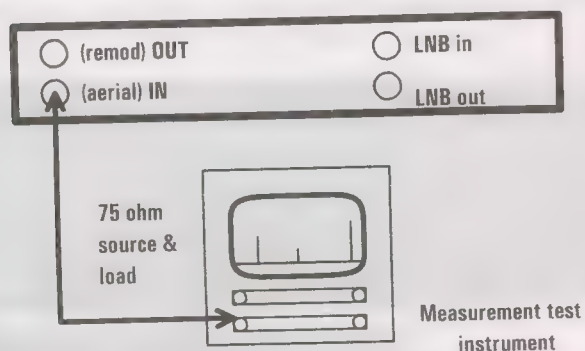
Futter's response:

"*The remodulator fitted during the Optus evaluation is fully compliant with the Cenelec requirements. There appears to be some interpretation differences as to how the measurement should be done; should it be done with a 75 ohm termination, or not? However, we have now fitted a remodulator that completely complies with the leakage specifications* (25 June 1996)." And, "*samples of fully compliant remods are being tested as we speak. The IRDs that are scheduled for dispatch to Australia will be fitted with the compliant remod.* (2 July 1998)."

And the 75 ohm termination confusion? Section 5.13 of Standards Australia regulations defines "conducted spurious signals." Section 5.13.2 details that a suitable test instrument connected to the IRD's L-band input terminal and the TV aerial input terminal will be used to determine if any signals created inside of the IRD are "leaking" backwards out of the receiver to a connected aerial system. We outline this procedure below.

With a 75 ohm "suitable test receiver" (or a 50 ohm instrument with a known power matching impedance adjusting pad), the spectrum from 100 kilohertz through 2,900 megahertz is "swept" for signs of spurious signals. Any signal stronger than -57 dBmV could be in violation of the standard.

RFI/EMI, then, can originate as an undesirable side effect of the SMPS design or quite independently of the power supply, it can be created within specific receiver segments (such as the remodulator). SMPS "noise" tends to be broadband in nature (covering a wide range of frequencies) and it repeats on multiples of the power supply operating frequency (a 100 kilohertz SMPS operating frequency will generate "harmonics" at 2x [200 kilohertz], 4x [400], 8x [800] and so on). It is a standard part of SMPS design to build in RFI "filters" to chop off any RFI noise elements including harmonics of

(remod) OUT
(aerial) IN
LNB in
LNB out
75 ohm source & load
Measurement test instrument

5.13.2 Method of Measurement. "Conducted spurious signals shall be measured as the power level of any discrete signal at the input terminal of the receiver ... connected to a load corresponding to the terminal impedance of the antenna... ."

5.7.2 Spurious Signals at Aerial Terminal. "The aerial terminal shall be bridged with a resistance equal to the source impedance from which the receiver is designed to work with a suitable test receiver and a standard signal generator to evaluate spurious signal voltages appearing across the terminating resistor. The maximum power measured in the terminating resistance shall not exceed 20 millimicrowatts at any frequency."

ACTUALLY - Experience with IRD Switched-Mode Power Supplies has not been Good

The theory behind a switched-mode supply is excellent. It will accept any mains supplied input voltage between 90 and 270 volts AC and operate. In Australia, the mains supply is mandated to be 240VAC plus a maximum of 6%; 254.4 volts. Ferrite core devices in the SMPS have a "run away" condition that occurs when the mains voltage climbs towards the top end of the design range. Garry Cratt of AV-COMM Pty Ltd advises, "*From the day we saw our first SMPS device* we have regretted the design. Virtually every IRD has had a ferrite saturation problem which simply shuts down the power supply. To overcome this, we routinely are forced to educate the IRD builders to the shortcomings with the switched-mode supply when it is placed into a situation where the mains voltage is at the top statutory limit near 255 volts. The IRD designer can redesign his SMPS circuit to compensate for this saturation problem, but it has been my experience that only one IRD ever came out of the box the first time *without being sensitive to ferrite core saturation*." Which IRD was designed to operate properly even with high mains voltages? "The Nokia Mediamaster series." Ironically, the switched-mode power supply design in IRDs is one of the stumbling blocks facing designers of digital analogue hybrid (DAH) receivers (see report starting below). To operate a wide range of dish movers (the actuator), a DC voltage in the region of 36 volts with a current capacity of 2 amps (minimum) is required. Getting that much voltage at the level of current the dish mover requires is virtually impossible with existing SMPS designs created specifically for digital IRDs. Which is one of the primary reasons why it has proven impractical to start off with an existing MPEG-2 DVB digital IRD and "stick in" the analogue function as an add-on.

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the operating frequency. The microscopic examination of the UEC 642, the result of the attention the receiver has attracted from detractors of the Optus Communications RABS project, could well suggest this receiver is cleaner than competitive units in the field today.

Our Own Findings

We had two negative criticisms and both have been corrected to our satisfaction. The AC fuse block is to be covered with a fireproof fibre shroud, and the remodulator is being replaced with a unit that Optus appears ready to assure users will not cause leakage problems. We have other observations to pass along.

The software that operates the 642 is fast and user friendly. However, the operating manual is complex and possibly only useful to someone with an engineering background. Moving seamlessly from the RABS line-up of services to one or more potentially available pay-TV platforms presently requires more user competence than we believe the typical viewer can muster. UEC advises that a new software upgrade will make changing from one platform to another "more seamless."

We believe the majority of the present sales are going to commercial users (such as the Western Australia government Westlink project) who are unlikely to ever touch the receiver once the desired data stream is connected and operating. You can, for example, utilise the 642 for a combination of C-band FTA and Ku-band FTA or Irdeto conditional access services. But you will not care for the menu steps required to move between the various C-band FTA services if you have previously experienced virtually any of the Korean or Taiwanese built FTA receivers. The 642 was never intended as an "enthusiast" receiver and won't give channel jumpers much joy if surfing around the satellite universe is your mode of operation. For its intended limited-application consumer and professional purpose, the 642 is as modern as any presently available Irdeto integrated receiver decoder in the world which UEC's Futter insists is very reliable (see p. 32). What happens next is up to the marketplace ... and of course Optus.

First Arrival

Hands On Test Hybrid Digital-Analogue

It has now become traditional that first-release IRDs make their way to SatFACTS for feedback and possible review here. This is the *first* analogue + free to air digital receiver we have seen although Europeans have been talking and writing about them since last December. We are indebted to Satech (Satellite Communication Technology Pty Ltd) for arranging this unit for test. We'll give you the conclusions first and then explain why we (and others) have reached these views.

The plain fact is most people would not find this hybrid unit suitable for their needs. It is to the credit of the management at Satech they came to this conclusion on their own without asking us how we would be preparing this report. The temptation to be "first" in the marketplace with an IRD that performs *both* the analogue and digital functions is great. We are reminded of a statement made during June by an executive of Japanese firm Toshiba. He was explaining why his firm has decided, at the last possible moment, it will not release digital format TV receivers in time for the launch in North America of digital terrestrial television (scheduled for November). As you might imagine, in a highly competitive environment for TV receiver sales, *not* having a digital TV set product takes some guts. His

memorable response was, *"Being first doesn't make you a leader."*

Being first with a single receiver that is capable of processing either analogue or digital format C or Ku band satellite signals interchangeably will sell some receivers, quickly. But as we learned in testing the "Phoenix-family" pre-production model supplied by Satech, it is possible to be too early and not have a sufficiently mature product to withstand the later versions from competitors that will be certain to follow.

This receiver (which never went as far as having a product identification number) does everything a SCPC + MCPC DVB Compliant digital IRD should do. This is basically the Phoenix 222 unit which is in just a few months time already well respected for its quick response time (when changing services) and the quality of the menu and graphics system. Quite separately, it also does everything you would expect a low threshold analogue receiver to do. It does not particularly care whether the transmission channel is in NTSC or PAL, DVB Compliant or the selfishly created PowerVu.

The pre-production unit reviewed drove home what is really required in a DAH (digital analogue hybrid) receiver (summarised to right). In the first level of hybrid, the single tuner drives separate analogue and digital processing boards which share a common power supply. The software menu allows the user to switch between memorised analogue and digital channels, conduct a search in either mode, enter new memory positions in either. For a fixed dish seeing only a single satellite, the designers could well stop at this point - provided some method of switching polarisation has been included.

Unfortunately, we have a number of totally unique polarisation switching schemes in the industry. The primary digital switching system is voltage - 14 volts for one polarity, 18 for the other. Which of course requires an LNB(F) that accepts 14 volts for one polarity, 18 for the other. This makes interfacing with a "polariser" difficult and the world is populated with millions (and millions) of polariser selection systems which predate the current voltage switching technique.

A true DAH receiver must have the ability to drive a non voltage switching polarity selection system as a part of memory channel access as well as during initial

Features You Can Expect in the First "Real" DA HYBRID Receivers

1) Analogue as good as the best threshold extension units now available with full memory functions for video threshold, audio tuning and noise reduction.

2) Full analogue "satellite scan" channel search allowing you to load into memory each vertical, horizontal (or RHC, LHC) analogue service located by the scanning function of the receiver.

3) Full "auto focus" control of dish drive to peak the exact location of the satellite through software driven energising of the dish; and, automatic memorisation of the satellite drive parameters for recall of the same satellite.

4) Separate satellite search and parameter memorisation for digital signals creating a "channel list menu" for digital services located distinct from the analogue services list.

5) Motor drive powering (for actuator or actuators) built-in eliminating the need for a "separate control box" for the dish drive functions.

6) Polarisation drives (to operate motor, magnetic or other polarisation switching devices) that function on either analogue or digital services (until now, the only way you can switch polarisation with a digital IRD is tell the receiver to switch LNB operating voltage - 14 or 18 volts, for example).

7) Direct upgrading of receiver software through Internet Web Site access to ensure the receiver's software is not out of date a day or week after you buy it.

SHAPE of DA Hybrids to come. Pre-production back apron of unit does not give-away dual format capability.

search and load. Moreover, the polarity switching must function for both the digital and analogue modes.

If you create a DAH design that begins with a standard digital IRD and stick in the analogue board, the new package immediately is limited to functions which the original digital receiver offered. This means no polarity control (beyond voltage switching or 22 kHz), and no motor drive capability. What makes more sense is to start with an analogue receiver that already includes the now standard analogue polarity and motor drive functions, and insert the digital board into the package.

The Phoenix pre-prototype we have now tested took the "tack analogue onto digital" design approach. The "real" DAH that will be available late in August takes the reverse, and we believe proper approach. Start with a housing that will contain all of the top of the line analogue features, and fit the digital into the container. Now reconfigure the software so the receiver is capable of seamless switching between digital and analogue services on the same satellite. For a final touch, it includes "auto focus" which gives the receiver a built-in ability to always zero in on the satellite's location. Auto focus is one of the primary features found in the highly rated Palcom 7700 series (analogue) receiver reviewed in the May SatFACTS.

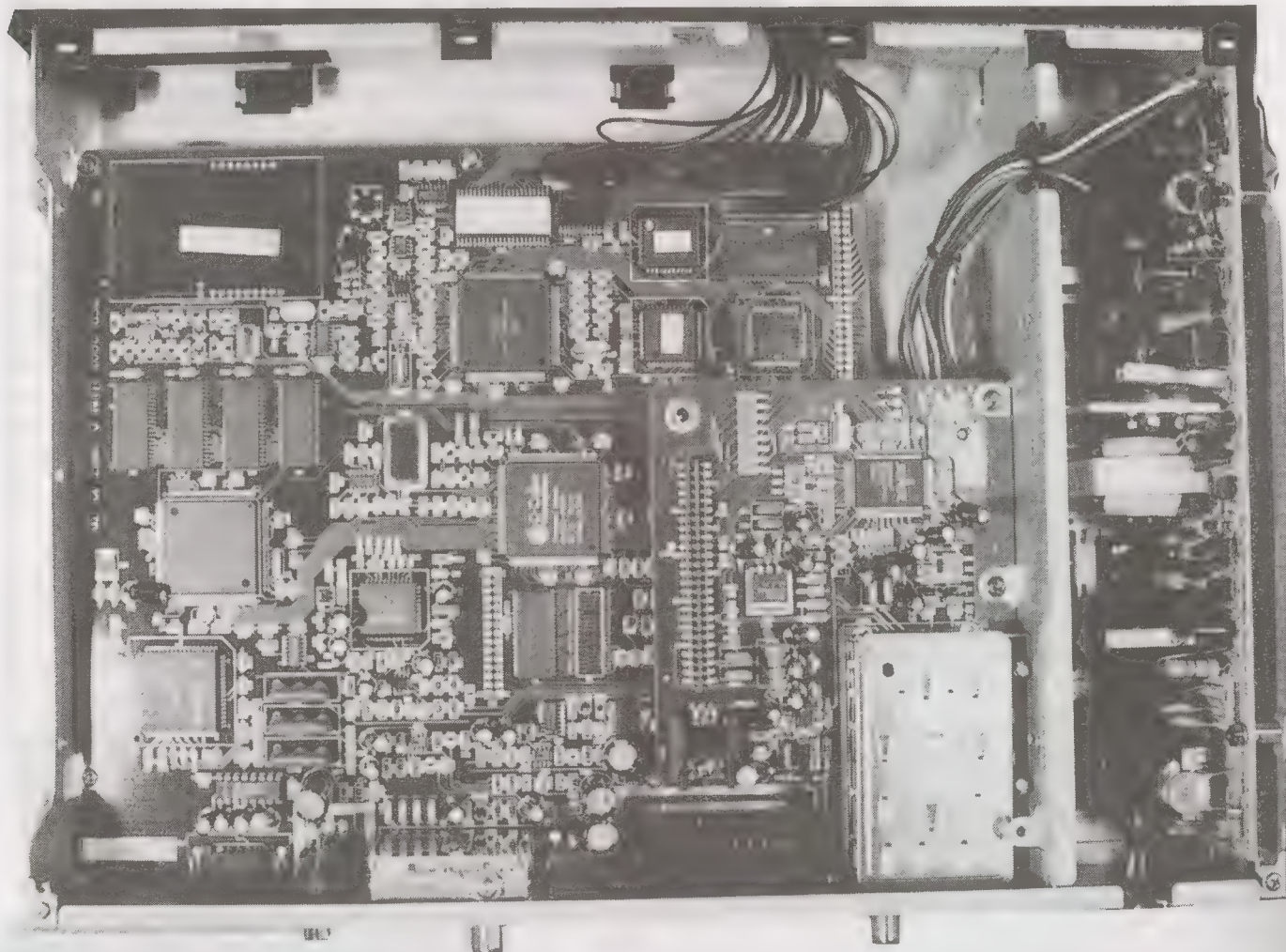
The digital analogue hybrid concept is a good one, but like any new technology there will be a learning curve associated with its development. Merely inserting an analogue board into an existing digital receiver does not seem like more than an interim step if you still require external equipment to control the dish polarity and move the dish from satellite to satellite. Moreover, the many different pathways to menu integration will create dozens of opportunities for creative software designers to produce easier to use, direct service access routines.

Sticking With a Product

RE-REVIEW of D7 MEDIASTAR

With "new" digital format IRDs appearing in the marketplace monthly, it is refreshing to see a model which the designers do not abandon after a couple of months of marketing in favour of something "newer" and "better."

We first reviewed the D7 MediaStar in March (p. 18) and observed at the time, "*this receiver is superior in ease of use to any receiver we have reviewed to date.*"

D7 MediaStar - every indication is this one will be serviceable

To complete that statement, we subsequently found the model 3100 from AV-COMM "as equal" in this department (May SatFACTS).

The D7 is sole-imported by OPAC Pty Ltd. MD Jacob Keness was the first in the Pacific to bring into this market the original Nokia Mediamaster boxes intended for Germany and the first shipment of Panasat (520) IRDs designed for South Africa. His level of personal commitment to identifying the "best for the Pacific" FTA MPEG-2 DVB Compliant IRD is second to none; he has been a true pioneer in this area of technical development. Keness believes the evolution of FTA IRDs will now focus on incremental improvements in software and hardware quality and the success or failure of a product will be a reflection of the importer's willingness to support the product with service and improvements.

The D7, Keness believes, is as good as any product now on offer and it now has the track record to prove it will not disappear from the marketplace after a brief period of marketing. With the latest software (version 2.09 is for PAL markets, 2.10 for NTSC), the D7's appeal is that it flows without difficulty between input signals with varying standards. The menu is straight forward and new services are loaded to memory in the following sequence:

1) Vertical or horizontal is selected (to determine the LNB switching voltage, as applicable)

2) The downlink frequency is entered (in C or Ku band)

3) Local oscillator frequency is entered (this determines the tuning frequency for the receiver L-band section); 5150 for most C-band LNBs, 11300 or as applicable for Ku band

4) The symbol rate is entered

5) Search is selected from the menu and within a few seconds the receiver has found the service and loaded the parameters into memory.

This receiver comes from OPAC preloaded with the reception parameters for each service on each of the primary satellites. If your installation utilises a voltage switching (14/18) LNB(F), simply plug in the L-band line from the dish, connect up the RCA or SCART leads and turn it on. Our experience with the software has been excellent; new services entered as previously described load in just a few seconds time.

Our previous review found the tuner sensitivity to be lower than a reference receiver used for testing. The latest software appears to correct this condition - the D7 is now second only to the R3100, and a close second at that.

And this observation. Sooner or later somebody will have to repair IRDs. When this day comes for the D7, the exceptionally clean circuit board layout and ease of accessing points within the circuit should make this unit a favourite with the repair crowd. This is an elegantly conceived receiver both inside and outside and like a fine wine, only seems to improve with age.

Sorting Out the Details

HOW TO GET IRDs INTO RABS LOCATIONS

A letter dated June 5th written by Imparja Television Chief Engineer Tim Mason on behalf of himself and Tony Bowden of ABC Darwin and Brian Ridgeway of ABC Adelaide contained a paragraph that upset many people. It read:

"Please note that at present there are no recommended decoders available on the market. It is most unlikely that any currently available decoder will be suitable for Imparja's and the ABC's future digital service. It is also most unlikely that any currently available decoder will qualify for any subsidy. Do not purchase any new digital decoder until you receive the broadcaster authorised information."

Was this a not so subtle message that Imparja was not accepting the Optus recommended UEC 642 for their conversion to RABS digital? Tim Mason on July 6th advised SatFACTS, "*All of the broadcasters making the switch to digital are doing far more than simply changing out decoders. I have to look down the road to what we would like to be doing 5 years or more out; how the digital package we are implementing today will be able to mature and grow with our needs. If the IRD selected has a cap on its capabilities, this will greatly inhibit our own ability to grow our services in the future. In that respect, we are dependent upon Optus to ensure us the IRD is capable of enhanced operational capabilities, that the multiplex plan will allow us to communicate more advanced services to the IRD locations, and that somebody is willing to take full responsibility for all of these things happening in the future.*"

Mason believes the Imparja + ABC digital bouquet will begin transmissions around 1 September. "*By that date I would expect every dealer in every small town throughout our coverage area to be capable of exchanging the existing analogue equipment for the new digital IRD.*" And which IRD? "*There is only one consumer unit Optus has approved for this service, the UEC 642.*" What about Mason's June 5th letter?

"*We are not simply arranging for a new IRD; we are dependent upon Optus for an entire package of services including the EPG. When I wrote the letter on June 5th, there may have been limited numbers of UEC 642s in the country but we had no EPG, no smart cards, no dealer structure to handle the change out. By September, I expect all of this to be in place.*" Mason told us he was also concerned that alternate IRDs which

were becoming available outside of the Optus administered RABS structure not be confused for RABS capable equipment. "*In a simplistic free to air structure, there may be other IRDs that will produce picture and sound. But if they cannot create the EPG, nor provide 'open TV' reception, their usefulness for RABS is limited. I don't want consumers misled into purchasing the wrong IRD.*"

Mason and Optus are also cautioning operators of self-help, community and BRACS re-transmission sites not to purchase a consumer version IRD for their conversion. Consumer IRDs that require user menu intervention in the event of a power failure or data stream glitch are thought to not be suitable for sites serving hundreds or thousands of terrestrial viewers. There are other technical concerns the consumer IRDs will not be acceptable for rebroadcast purposes - including the purity of the colour burst signal. Under the RTIF subsidy programme, $2,500 is available per site for equipment change out. Up to 800 commercial grade units will be required during the changeover but to date Optus has not recommended a suitable IRD for this purpose. Mason believes such units, when identified, "are likely to cost around $5,000" each. Many commercial sites process one or more TV channels and one or more radio channels simultaneously and this will require a commercial IRD for each radio or TV service. The subsidy programme obviously is not going to pay more than a small percentage of these conversions.

How long might all of this take to sort out? Mason: "*I believe we will still be working on this at the end of next January.*"

Rumours Galore

Pay-TV WITHOUT PAYING CONTINUES IN AUSTRALIA

There were rumours. Followed by rumours describing the rumours. June 29th was to be encryption day. So was July 1st. Nobody thought to ask which year.

The reality is Austar's 18 channel pay-TV service continues free to air and as many as 55,000 ex-Galaxy viewers are approaching the 2nd-month-anniversary of pay-TV without paying.

Foxtel's early June clever move to acquire ex-Galaxy subscribers through the purchase of their IRDs looked less clever a month on. As of July 7, Foxtel had not followed up its initial letter advising former Galaxy subscribers of their ownership of the IRDs. Foxtel in a June 3 letter told ex-Galaxy subscribers -

"Foxtel has purchased the Galaxy digital set-top unit installed in your home ... (and) is attempting to ensure you will continue to have access to the temporary satellite programming ... subject to finalising these arrangements, we will be sending a letter explaining how service can be maintained."

The second letter began to appear July 8th (see p. 1).

As SF elaborated in our June issue, owning the 55,000 subscriber location IRDs was a nice move, but hardly sufficient to implement an "interim" service. Tests on PAS-2 (reported here in June) proved only that Optus B3 is not a necessity. But firing up on PAS-2 now, involving repointing 55,000 dishes, only to be faced with repointing them a second time early in 1999 after PAS-8 becomes available is not a logical move. First, there is the possibility PAS-8 won't launch - on time, at all, or will be damaged in launch. That leaves us with somehow gaining access to B3. The possibilities include:

1) Negotiating a rental agreement with Optus for reactivation of the two original Galaxy transponders - signing up the ex-Galaxy subscribers, and moving them back to the original two transponders.

2) Negotiating a shared transponder contract with Austar, leaving the ex-Galaxy subscribers viewing the Austar channels.

Both options involve also negotiating use-rights for the Irdeto conditional access system which Optus Vision and Austar reportedly purchased from the Galaxy holdings.

Owning the IRDs is step one to 55,000 new Foxtel-served DTH subscribers. Having transponder space to reach the IRDs is step two. And having a legal right to utilise the Irdeto conditional access system which the 55,000 IRDs require for addressing is step three. Someplace between steps one and three, Foxtel appears to have struck an impasse. That impasse is called Optus.

GALAXY Customers

You are receiving a temporary service.

GALAXY Customers

If service should cease, it will be for commercial and operational reasons and not as the result of any government regulation.

ex-Galaxy viewers subject to service cancellation without warning

With the Irdeto CA system turned off, Austar is also unable to reactivate "Night Moves" and parental rating services. In fact, Austar has no control over who watches their service as long as the Irdeto system remains off. Like it or not, Australian pay-TV is now frozen in a time warp.

A test of corporate wills is underway. The longer the present stand-off continues, the nearer Foxtel comes to being able to activate a PanAmSat service. And the longer Foxtel has to fine tune the new service before a formal launch, the more complicated corporate life becomes for Optus - the erstwhile competitor.

a technical and marketing advisory

memo

to the membership from your industry trade association

SPACE Pacific

Satellite
Programme
Access
CommittEe

A trade association for users, designers, installers, sellers of private satellite-direct systems in the Pacific Ocean & Asia Regions

Letter To Greece

There is an effort underway to help television officials in Greece realise the opportunity they are currently missing in expanding national Greek television service (ERT1) into Australia and the Pacific. SPACE suggests industry personnel with an interest in this issue read the following letter, and create their own additional communications to ERT in support of this project.

...

Mr. Gerasimos Moshopoulos
Supervisor Engineer
ERT - Department of Satellite, Cable TV
via fax + +30-1-601-2960

"*It was a great pleasure* and surprise to hear from you. First of all, please allow me to introduce myself. I have been involved in the professional telecommunications industry since 1960. I am writing to you as a Greek ex-patriot living in Australia since 1946.

"*Australia has more* than 1.2 million direct immigrants or descendants of Greece anxious to have news of their mother country through the national broadcasting system, ERT1. Recently, the spokesman for the Ministry of Press and Mass Media has been quoted as saying Greek Australians would be able to receive broadcasts from ERT1. You have mentioned to me the possibility that Optus or Foxtel may transmit ERT1. Unfortunately, their footprint through Optus B3 covers only portions of Australia. Such transmissions would still not be received in New Zealand and the islands of the Pacific and Greeks living outside of the Optus reached areas will still be without ERT1.

"*You mentioned using Intelsat*. Our experience is there are other satellites with superior footprints to not only Australia but the surrounding regions as well; PanAmSat (PAS-2) for example through several bouquets is well received with 2.4m dishes; AsiaSat 2 with the European bouquet works well with dishes from 1.8m and up in size. AsiaSat 2 in particular is very popular with several dozen ethnic broadcasters from Europe, Asia and the Middle East. It makes the most sense to those of us here on the ground to join with national broadcasters already clustered on an operating satellite of proven coverage ability; such as AsiaSat 2.

"*While it is true Optus pay-TV* does provide subscribers with Greek services ANT-1 and Mega, this service is only available to a small percentage of the total Australian homes and all expansion of cable TV ceased

MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer." All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) each year in New Zealand. Members also participate in policy creation forums, have correspondence training courses available. To find out more, contact (fax) 64-9-406-1083 or use information request card, page 34, this issue of SatFACTS. Page space within SatFACTS is donated each month to the trade association without cost by the publisher.

last October. The reality here is that cable has failed in its promise and the pendulum is now swinging properly towards small dish satellite DTH service. To make Greek national television universally available, which I trust is your objective, I urge you to focus on selecting the correct satellite and the correct (digital) transmission format.

"*There are two alternatives* available; a high-powered C-band service from PAS-2, the future PAS-8, AsiaSat 2 or the to be available Orion 3. Or, packaging ERT1 within a digital bouquet from a Ku-band service that will be available free to air (for example - taking spectrum space on PAS-8, Ku later this year to ride piggy back on the proposed Foxtel pay-TV service using the same satellite).

"*If ERT1 is offered* only in a pay-TV environment, I fear it will not attract the support possible. As Deutsche Welle, TV5, RTPi, RAI, RTVE and numerous others have previously worked out, a free to air service on a carefully selected satellite creates a stable environment that encourages interested viewers to invest in the required equipment. Greek descendants throughout the South Pacific await your decision."

Paris Cockinos A.M.I.E.T, S.A.I.R.E.E. (Australia)
Managing Director
Sphere Communications, 161 Bunnerong Rd, Kingsford NSW 2032 (tel ++61-2-9344-9111, fax ++61-2-9349- 5774).
cc: Mr. Dimitrios Reppas, Minister of Press & Mass Media, 8th Floor, Zalokosta 10, Athens 10163, Greece (tel ++30-1-369-6704; fax ++30-1-360-6969).

...

The writer, Paris Cockinos, and his son Jack Paris Cockinos, operate a telecommunications business headquartered near Sydney specialising in air to ground communications for international airlines. His firm pioneered long range high frequency single sideband communications for aircraft inflight use. A home dish enthusiast uniquely supported by test equipment and expertise only available at professional levels, he believes services such as ERT can be encouraged to expand to a world-wide coverage platform provided those who will most benefit make their interest in such a service known.

SatFACTS readers with an interest in seeing the expansion of the Greek national ERT service into the Pacific are encouraged to become a part of this campaign. If you uncover additional individuals at ERT or within the Greek government who should be contacted, please share your knowledge with us to allow an aggressive effort to be created and expanded.

Paris Cockinos believes there is an active study of this proposal now underway in Greece. What happens next will largely be up to the Greek community in the Pacific.

STAR PERFORMERS

This month's featured **SPACE** Pacific Installers

Wellington, NZ • Rock Communications Ltd. tel 64-4-479-1052. DTH C-band to 10m, Ku to 2.4m; SMATV to 100 outlets. Broadcasting, computer, telecom courses.

Katanning, WA • Tambellup Electrical. tel 61-89-8251-008. C-band to 3m, Ku to 2.4m; SMATV to 10 outlets. Galaxy accreditation.

Palmerston North, NZ • Telsat Communications Ltd. tel 64-6-356-2749. C-band to 7m, Ku to 3m; SMATV to 160 outlets. Advanced TC in telecommunications, electrical services registration.

Auckland, NZ • Satellite Technology Services, Ltd. tel 64-9-827-4838. C-band to 4m, Ku to 3m. Specialists in Asian language installations.

New Caledonia • Studio 7 Antenne. tel ++687-438-156. C-band to 7.5m, Ku to 4.5m. SMATV to 160 outlets. Full test equipment.

SPACE Installer/Dealer Members: Please complete questionnaire form p. 29, Teck Notes Vol. 4, no 1 to be listed here.

The CABLE Connection

Fail-safe IRDs

Operators of licensed retransmission sites presently carrying BMAC services such as Imparja and GWN are facing a unique challenge in their conversion to digital feeds. They are entitled to a $2,500 subsidy for replacement "commercial grade decoders." And therein is the challenge. We have consumer grade decoders, and we have professional grade decoders. A "commercial grade" IRD would fall someplace between the two. There is no such device on offer, from anyone, for any price.

BMAC service feeds have been configured to allow one decoder to simultaneously process a television signal and one or more radio channels. In a remote broadcast site situation, this allows one box to connect the satellite television feed to a local low power TV transmitter, the satellite radio feed to a local low power radio transmitter. In the MPEG-2 world, consumer grade receivers process television or radio - but not simultaneously. If you are re-equipping a retransmission site now fed with BMAC with MPEG-2, each separate signal source will require its own IRD. At twice or more the cost of a single BMAC decoder.

There are various estimates of how many licensed retransmission sites must be upgraded with digital receiving equipment. Some reports suggest 500, others as many as 800. Through the (Australian) Commonwealth (RTIF) subsidy offer, the Federal Government is willing to spend as much as $2,500 per site - $1,250,000 to $2,000,000 - to assist with the conversions.

A site requiring two or more digital IRDs to replace their existing BMAC decoder could in theory do the upgrade for the amount of the Commonwealth Subsidy, but only if they select consumer grade IRDs for the change out. Nobody is recommending use of consumer grade IRDs for retransmission sites. There are many reasons.

1) Consumer grade IRDs suffer lock up that require a power down / power up sequence to restart the IRD. The majority of retransmission sites are unattended and if someone has to travel to the site to restart the IRD, there will be some significant periods of no service as a result.

Optus Testing Identifies Areas of IRD Concern

Early in November (1997), testing completed by the engineering department at Optus identified a number of areas which were believed important to have corrected before either consumer grade or business/commercial grade IRDs were approved for the RABS project. The posture of Optus at that time was to identify one or more IRDs capable of giving the level of reliable service which was considered minimum for RABS use. The data to follow appeared in a 50-plus page report prepared by Optus engineers for RABS project management. Note there is no mention of the power supply or the need to reboot the IRD in the event of mains AC or signal loss. Note the "business IRD" mentioned here was not necessarily an IRD intended for rebroadcast site use but rather a middle-grade IRD intended for business users of RABS with text transmissions.

"2. Summary. This section summarises the results of tests. Specifically, two IRD sets of requirements are discussed; a consumer IRD suitable for Remote Area Broadcasting and a business IRD for business broadcast applications. The issues raised all require correction. Items identified as critical require correction; items identified as non-critical are considered minor that will require stipulation in a future contract.

Issue:

a) Asynchronous data port operation at 1.2 to 9.6 kbit/s (consumer - not critical; business - critical).

b) Teletext inserted into the VBI of the IRD output video signal (consumer - not critical; business - critical).

c) Teletext information available by OSD (consumer - not critical; business - not critical)

d) Mains cable to be compatible with Australian plug/socket (consumer - not critical; business - not critical)

e) Electromagnetic Interference CE Tick (consumer - not critical; business - not critical)

f) Video picture does not start until 24th line (consumer - not critical; business - not critical)

g) IRD does not maintain colour for TV set when it is not locked to an IRD stream (consumer - not critical; business - not critical)

h) IRD video level and line time out of specification (consumer - not critical; business - not critical)

i) Vertical synchronisation signal is incorrect format (consumer - critical; business - critical)

j) Audio levels too high coupled with audio phase noise problem (consumer - critical; business - critical)

k) RF modulator chroma delay of 180 nsec (consumer - not critical; business - not critical)

l) TV RF antenna port leakage is out of specification (consumer - critical; business - critical)

m) Antenna tuning screen is difficult if not impossible to use for satellite dish alignment (consumer - not critical; business - not critical)

2) If the mains voltage supply is interrupted or erratic (with voltage spikes and brown outs), consumer grade IRDs often require rebooting (in the best case) or complete reloading of the reception parameters (in the worst case). Again, human intervention is required and that is not satisfactory for even attended remote broadcast sites.

3) Consumer IRDs are not totally compliant with over the air software upgrades; they may load the new instructions properly but then require some hands on operator intervention to reboot.

4) Switched-mode power supply units operating dangerously close to "ferrite saturation" will freeze up and cease to process MPEG-2 services if the power source is temporarily "high."

Consumer IRDs are not suitable for retransmission sites, and that would include cable TV headends as well under most circumstances. Professional grade IRDs may or may not be suitable - prices range upwards from (A)$4,000 per unit. In the case of the RABS project Aurora format MPEG-2, using Irdeto conditional access and smart cards, the commercial grade IRDs begin near $5,000 and climb rapidly.

There are currently no intermediate grade "commercial IRDs" available that correct the short comings of the consumer grade IRDs. More rugged and forgiving power supplies, the ability to operate under a wider range of temperatures and mains voltages, fail-safe "return to previous settings" software that restarts the receivers in the event of loss of mains power or signal, and a rack mounting configuration are minimum requirements. An IRD with the ability to be "talked to" from a remote (telephone) site is also desirable as this would allow a distant point to dial up and reset or restart any IRDs that did not come back to a proper operating condition after a power or signal failure.

Most of the emphasis to date has been on the consumer IRDs requiring change out for the RABS conversion. In fact, more TV viewers get their satellite fed services through retransmission sites than direct through their own DTH dishes. And this means until the present hardware (suitable IRD) challenge for retransmission sites is corrected, the total conversion from BMAC to digital fed sites cannot be completed.

One approach is to take a consumer grade IRD and "ruggedise" the device. That means stripping out the existing power supply, adding new software to force the receiver to reset to the last operating condition, provide additional cooling and mount the package on a 19" panel. Optionally, the ruggedising process would add "communication ability" to the IRD as well by giving it the skill to take instruction through a telephone line modem interconnect. Given the need for sufficient hardware to re-equip up to 800 existing sites, there is several million dollars in business awaiting a solution to the problems. Alas, it won't happen overnight and Optus has yet another RABS project delay facing management.

SatFACTS Pacific/Asian Region Orbit Watch: 15 July 1998

Analogue Free-to-Air 57E to 80E

Channel	Satellite / Freq
DD1	**55E/2DT** 1330/L
Sun Music	**57E/703** 1395/R
RTNC	1352/R
Gemini	1220/R
AsiaNet	1170/R
WorldNet	1095/R
TVi	1025/R
Muslim	975/L
Tests	**66E/704** 1385/R
Mongolia	1135/L
Home TV	**68.8/Pas4** Vt/1310
ABN	Hz/1365
BBC W	Vt/1286
Sony TV (Hindi)	Hz/1240
Maharishi	Hz/1218
Doordar.	Vt/1116
CNNI	Hz/1065
TNT/Cart.	Hz/1040
MTV Asia	Hz/965
ZJTV	**76/Ap2R** 1390/Vt
TVT	**78.5/Th3** 1280/Vt
Army TV	1390/Vt
MRTV	1460/Vt
Mynamar	1465/Hz
Tests	1500/Hz
RAJ-TV	1510/Vt
Unk.Asian	1570/Hz
Tests	1630/Hz
RAJ-TV	1655/Hz
ATN	1674/Hz
TK Rossija	**80/Exprs.** 1472/L
VTV4+	1275/L
ACT/TB3	1225/L

Anal. Free-to-Air 80E to 113E

Channel	Satellite / Freq
Russia 3	**80/Exprs** 1025/R
RTR 1	**90/S6** 1475/R
Orbita I	1275/R
RTR II	1234/R
Orbita II	1215/R
VTV4	**91.5/Me1** Hz/1440
RTM1	1270/Hz
Metro	**93.5/In2b** 987/Hz
National	1022/Vt
DD9	1080/Hz
DD.7 (T)	1070/Vt
DD.9(K)	1180/Vt
DD.1	1268/Vt
DD.	1310/Vt
DD.4	1388/Vt
ORT 1	**96.5/S14** 1475/R
Madagas-car ++	1325/R
Tv Azer.	1275/R
ERTU Egypt	**100.4/As2** 1508/Hz
TV Shopping	1490/Vt
Feeds/Iran	1470/Hz
Feeds #	1290/Vt
WorldNet	1265/Hz
CCTV4	1190/Hz
RTPi	1170/Vt
RTR	**103/S21** 1475/R
Vrk/Apt	1275/R
TVRI	**108/B2R** 1150/Hz
TPI	**113/C2** 967Vt
TV5	990/Hz

Polarisation?
/L is left hand circular, /R is right hand circular. /Vt is linear vertical. /Hz is linear horizontal.

Anal. Free-to-Air 113E to 148E

Channel	Satellite / Freq
Brunei, feeds	**113/C2** 1010/Vt
MTV Asia	1030/Hz
Herbalife (2100 HKT)	1070/Hz
TV Indosiar	1090/Vt
CNBC	1110/Hz
ANteve	1130/Vt
CNNI	1177/Vt
SCTV	1190/Hz
TV3	1250/Vt
ATV(7) Australia	1270/Hz
TVRI	1310/Hz
Gujarat +	1350/Hz
RCTI	1408/Vt
Moscow	**122/As-G** 1475/L
Test Card	**128/Jc3** 1070Vt
Test Card	1170/Hz
CETV SD	**134/Ap1A** 1330/Hz
CETV2	1250/Vt
CETV1	1170/Vt
CCTV7	**138/Ap1** 990/Hz
Orbita-I	**140/S7** 1475/R
ORT1	**145/S16** 1475/R
RTR Russia	1275/R
GMA	**146/Ag2** 1363/Hz
Test Card	**148/Me2** 1070/Hz

Worldstar Radio Sat
Asiastar 1 to 105E (01/99); downlink 1.451-1.492 (GHz). Audio channel capacity: 576 @ 16Kbit/s.

\# - Check for wildcard feeds

An. Free-to-Air 150E to 180E

Channel	Satellite / Freq
RCTI	**150/C1** 990/Hz
NHK	**169/Pas2** 1090/Vt
CNNI	1183/Hz
CNN Feeds	1155/Hz
Feeds #	1370/Vt
TV Shopping	1405/Hz
Feeds #	**174/I802** 984/R
Feeds #	973/R
Feeds (KBS)	**177/I702** 984/R
Feeds #	963/R
Feeds #	**180/I701** 1340/R
RFO	1309/L
Feeds #	1220/R
Feeds #	1175/R
Feeds #	1090/L
Feeds #	1020/L

PALAPA C1

Channel	Freq
Tests	990Hz
Tests	1140Hz
Tests	1220Hz
Tests	1330Hz
Tests	1360Hz

C1 not recently reported

Encrypted Analogue

Channel	Satellite / Freq
Discov. India	**68.8/Pas4** 1365/Vt
ESPN	1290/Hz
HBO Asia (d) *	**113/C2** 1150/Hz

* No longer available DTH, only to cable TV headends (Taiwan, Philippines): B-MAC

NON MPEG-2 DIGITAL SERVICES

Channel	Satellite / Freq
People's Net (GI 1.5)	**113/C2** 1220/Hz
RPN-9 (SA 1.5)	**142/G2** 1225/L
Fox/ Prime (SA 1.5)	**169/ Pas2/** 1161/Vt
Filipino Channel (GI 1.5)	1314/Hz

Frequencies Given in these charts are in C and Ku band IF. To calculate C-band RF, take IF given and subtract from 5150; for Ku-band using 11.300 LNB add IF given to 11,300. I.e., 5150-1508 = 3642 while 1358 + 11,300 = 12,658. (Tks-Mad Greek)

July Alert

ChinaStar 1 (87.5E) with C + Ku on board now testing with regular service mid-July; Sinosat 1 at 110E if successfully launched should be testing before next issue of SF (C + Ku, wide area coverage). CNNI plans to drop PAS-2 Hz feed suggests watching for replacement use of 3967/1182 spectrum; probably MPEG. Logic suggests FTA service from Austar will come to end before mid-August but not without many problems for Foxtel.

53.2	55	57	66	68.8	76	78.5	80	87.5	93.5	96.5	100.4	103	107	108	113	122	128
S27	2DT	703	704	Ps4	Ap2	Th3	Ex2	Cs1	Me1	In2B	As2	S21	Ct1	B2R	C2	As-G	Jc3
C	C	C	C	C	C	C	C	C,Ku	C	C	C	C	S	C	C	C	C,Ku

134	138	(139)	140	145	146	148	151	152	156	160	161	(166)	169	174	177	180	148W
Ap1A	Ap1	(Or3)	S7	S16	Ag2	Me2	C1	A3	B3	B1	Mb1	(Ps8)	Ps2	801	702	701	Es4
C	C	C,Ku	C	C	C	C	C	Ku	Ku	Ku	C	C,Ku	C,Ku	C	C,Ku	C	Ku

OPTUS B3 156E (Ku only)

Austar Mpeg 2	1389/Hz
ABC WA	1358/Vt B-MAC
Imparja	1355/Vt B-MAC
Optus Mpeg test	1326/Hz
GWN (to Sept.)	1300/Vt B-MAC
Net 9, Sky	1233/Vt B-Mac
Austar Mpeg 2	1264/Hz
BMAC	1230/Hz
School tv	1170/Vt
Aur. Test	1107/Vt
Imparja	1040/Hz B-MAC

Optus A3/152E(a)

ATN7png	1297/Vt
ATN7png	1430/Vt

a/occasional use

Palapa C2 Ku (seen South equator)/113E

Test bars	11.148/Vt

MeaSat 2 148E

Tests	1070/Hz*

* Colour bars, audio 6.8: C-band covers Aust, NZ

OPTUS B1 160E (Ku only)

RHEF	1430/Hz
Data	1402/Hz
QSTV	1377/Hz B-MAC
SE ABC HACBSS	1370/Vt B-MAC
SE SBS HACBSS	1344/Vt B-MAC
NE SBS HACBSS	1339/Hz B-MAC
NE ABC HACBSS	1313/Hz B-MAC
Sky Channel	1296/Vt B-MAC
ABC Radio	1276/Hz (digital)
OmniCast	1270/Vt (FM/FM)
ABC feeds	1247/Hz Pal
Sky Nz (sport)	1245/Vt VidCrypt
Net 9 feeds	1220/Hz B-MAC
Sky Nz (Sky 1)	1218/Vt VidCrypt
Net 10	1182/Vt E-Pal
Net 9	1180/Hz E-Pal
Net 10 feeds	1155/Vt Pal
QTQ9	1145/Vt
Optus test	1124/Vt
NZ feeds	1105 & 1092/Vt-#
Herbalife	1094/Vt
7 Net	1086.Vt E-PAL
Aurora MPEG-2	1076/Hz (tests)
CAA air to ground	1009/Vt Nbfm

PAS-2 169E (C + Ku)

CCTV	1433.5/Vt (Sa9223)
Feeds-#	1407/Hz
Value Ch.	1405/Vt
Discovery PowerVu	1374/Hz (Sa9223)
AB Asia, feeds-#	1335/Vt
ABS/CBN	1314/Hz (GI 1.5)
CNNI (1/2 Tr)	1250/Vt
MPEG-2 PowerVu	1249/Hz (Sa9223)
FoxSports	1160/Vt (SA 1.5)
Feeds-#	1150/Hz
Feeds-#	1120/Vt
NHK (digital)	1115/Hz
NHK anal.	1090/Vt
NBC Mux MPEG	1057Vt (Philips)
MPEG-2 PowerVu HonKong	1002/Vt
TCS Sing.	967/Hz

PAS-2 Ku

GWN	12.263V
MediNet	12.286V
Telstra Bendigo	12.300V
Napa TC	12.415V
MTV Asia	12.604V (MPEG)
ABC Interchge	12.629, 638, 646 /Vt
Foxtel	12.714H

Intelsat 801 174E

Feeds-#	963/R
Feeds-#	984/R

Intelsat 702 177E

Feeds-#	963/R
AFRTS	973/L (PowVu)
Feeds-#/ KBS	984/R
Space TV Sys	12.612H (MPEG)

Intelsat 513 177W

Feeds-#	963/R
Feeds-#	984/R

(513 Ku)

Service	RF Freq.
US Nets	10.980V
NBC	11.015V
Feeds	10.510V

Ku Services
Intelsat Ku band services shown here are boresighted to Japan and nearby Asia, have not been reported south of equator.

- check for wildcard feeds

Intelsat 701 180E(W)

TVNZ	955/Dmv 3000
TVNZ	964 Dmv
TVNZ	972/Dmv
TVNZ	980/Dmv
TVNZ	988/Dmv
Occ Vid.	1.020**
TVNZ	1.030
RFO +	1055**
SPN	1.069
Feeds-#	1.090**
SCPC	1.126
SCPC	1.136
Vidip/(e)	1220-#
Feeds-#	1.254
NHK(e), NBC	1.270
TVNZ	1.293/e
RFOanal	1.309**
Feeds-#	1,340
10 Oz MCPC	1.385 (PwRvu)
CNN USA(e)	1430

* RHC & LHC
** LHC only
e/ encryption

(701 Ku)

NHK	11.135H
CBS	11.475H
CNN	11.508H

UPCOMING SATELLITE LAUNCHES

Sinosat 1 - >July 14 to 110E / C + Ku
JcSAT6 delayed to Aug 22 / Ku
Orion 3 to 139E; now October 1 / C + Ku
PAS-8 to 166E - October 29 / C + Ku
Inssat 2E - November 13
Gorizont 33 to ??? - January
AsiaSat 3s - March 1 / C + Ku
Intelsat K-TV to 95E - March - high power Ku

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 July 1998

Bird	Service	RF/IF & polarity	# Prog channels	FEC	Msym	Interoperable Receivers
I703/57E	Sky News	4187/963RHC 4140/1010RHC	1 1	3/4 3/4	5(.632) 5(.632)	unknown
	CNBC	4018/1132LHC	1	3/4	6(.000)	unknown FTA (NE zone beam)
I704/66E	TV5	4055/1095RHC	4	3/4	27(.500)	Virtually any FTA receiver
	Indian bouquet	4068/1082LHC	2(?)	1/2	7(.100)	HS-100C, e3
PAS4/68.5E	ART/ BBC	3980/1170Hz	2	3/4	5(.632)	e3
	TVSN + TFC+	3743/1407Hz	6	3/4	21(.800)	(MPEG-2, Iredeto) (some CA)
	CCTV	3716/1434 Hz	6	3/4	19(.850)	Virtually any FTA receiver
Ap2/76E	AXN	3600/1550Hz	8	7/8	28(.340)	(inactive?)
	Reuters	3636/1514Hz	1	3/4	5(.632)	(inactive?)
	TVB 8	3680/14701Hz	2+	3/4	13(.240)	PowerVu (CA likely)
	Hallmark	3720/1430Hz	7TV	3/4	19(510)	PowerVu, eventually all CA
	Plus 21 (Adult)	3787/1363Hz	1	3/4	6(.110)	PowerVu Sept. start/CA
	Disney	3880/1270Hz	2	5/6	28(.125)	CA (receiver unknown)
Thaicm 3/78.5E	UTV	3920/1230Hz	6TV(#1)	3/4	26(662)	Mostly CA
	UTV/MCOT	3880/1270Hz	8TV(#2)	3/4	27(.500)	Mixed CA and FTA
	Reuters Feeds	3636/1514Hz	1TV	3/4	5(.632)	Nokia e3, probably others
	Thai 5 Bouquet	3600/1550Hz	8TV	3/4	26(.662)	Nokia e3, probably others
Measat 1/91.5	India Bouquet	12284/12346Vt	10+TV?	7/8	30(.000)	Philips
As2/100.5E	Chinese tests	12.295Hz 12.329Hz	1TV 1TV (BTV 1)	2/3 1/2	6(.103) 6(.930)	HS100C, e3
As2/100.5E	Laos TV	4143/1007Hz	1TV	2/3	2(889)	Virtually any SCPC receiver
	Euro. Bouquet	4000/1150Hz	6TV, 1r. (#3)	3/4	28(.125)	Any DVB receiver
	Hubei /HBTV	3854/1296Hz	2	3/4	4(.418)	Virtually any SCPC receiver
	Hunan TV/SRTC	3847/1303Hz	1	3/4	4(.418)	Virtually any SCPC receiver
	GuandongGDTV	3840/1310Hz	1	3/4	4(.418)	Virtually any SCPC receiver
	Inner Mongolia TV Zizhiqu	3828/1322 Hz	2	3/4	8(.397) (1-China) (2-Mongolia)	Virtually any SCPC + MCPC receiver
	APTV London	3800/1350Hz	1	3/4	5(.631)	DMV, HS-100C, N163 /17X/2X
	BBC Radio	3793/1357 Hz	?	?	?	(Comstream ABR200/202)
	WTN Jerusalem/ London	3790/1360 Hz	1	3/4	5(.631)	DMV, HS-100C, N163/17X/ 2X
	WTN London	3786/1364Hz	1	3/4	5(.631)	Mostly CA now,
	WTN HK	3775/1375 Hz	1	3/4	5(.631)	Virtually any SCPC receiver
	WTN Moscow	3770/1380Hz	1	3/4	5(.632)	Virtually any SCPC receiver
	LiaoningTV/Svc2	3734/1416Hz	1	3/4	4(.418)	Virtually any SCPC receiver
	Jiangxi /JXTV	3727/1423Hz	1	3/4	4(4.18)	Virtually any SCPC receiver
	Fujian /SETV	3720/1430Hz	1	3/4	4(.418)	Virtually any SCPC receiver
	Quinghai TV Zenghou	3713/1437 Hz	1	3/4	4(.418)	Virtually any SCPC receiver
	Henan TV Main	3706/1444Hz	1	3/4	4(.418)	Virtually any SCPC receiver
As2/100.5E	Sky Racing	4020/1135Vt	3TV	1/2	18(.000)	Pace DVS-211 (CA)
	EMTV	4006/1144Vt	1TV, 2 radio	3/4	5(.632)	(now) CA: PV9234
	Hallmark/KIBC	3940/1210Vt	2TV, 4 aux.	2/3	26(.655)	HS-100C (2.05), e3 (V5.0)
	STAR/ ISkyB	3900/1250Vt	19TV w/3744	7/8	26(.845)	Now all CA (Pace DVS211)
	Hei Long Jiang	3834/1316Vt	1TV	3/4	4(4.18)	Virtually any SCPC receiver
	JSTV	3827/1323Vt	1TV	3/4	4(.418)	Virtually any SCPC receiver
	AHTV	3820/1330Vt	1TV	3/4	4(.418)	Virtually any SCPC receiver
	Shaanxi/"QQQ"	3813/1337Vt	1, 1 Radio	3/4	4(.418)	Virtually any SCPC receiver
	Guangxi GXTV	3806/1345Vt	1, 1 Radio	3/4	4(418)	Virtually any SCPC receiver
	Eastern TV Taiwan	3785/1365 Vt	5TV (#5)	3/4	18(.000)	Pv9223 (CA)

Bird	Service	RF/IF & Polarity	# Prog. channels	FEC	Msym	Interoperable Receivers
(As2/100.5E)	Myawady TV	3766/1384Vt	1TV	7/8	5(.080)	HS-100C (PIDs now 1062/1063)
#	Japan Tel (feeds)	3765/1385Hz	1TV	3/4	5(.632)	Virtually any FTA receiver
	ISkyB	3744/1406Vt	19TV w/3900	7/8	26(.845)	Pace DVS-211 (CA)
C2/113E	Tests	11.500Hz	multiple TV	7/8	26(850)	Pace DVS-211 (CA)
	Star Indovision	3500/1650Hz 3580/1570Hz	20 TV (#7)	7/8	26(.850)	Pace DVS-211 (CA)
	Indovision	3460/1690Hz	6TV (**#7A**)	7/8	21(000)	Pace DVS-211 (FTA)
	MegaTV	3780/1370Vt	5TV (**#8**)	3/4	27(.500)	N2X/DVS-211(CA)
Thaicom 1/120E	Thailand terres	4120/1030Vt	6TV	2/3	27(.500)	unknown
	ITV Thailand	3946/1144Vt	1TV	3/4	6(000)	unknown
AP1A/134E	AXN	4060/1090Vt	8	7/8	28(.340)	unknown
AP1/138E	Reuters	3732/1418Vt	1TV, data	3/4	5(.632)	N163/17X/2X
	CNNI + Cartoon	3980/1170Vt	2+ TV	3/4	26(000)	(CNN clear) / unknown
Palapa C1/150.5	Indovision	4117/1033Hz	10TV	7/8	26(.850)	same as 3580 C2
Optus B3 156E	Aurora Test	12.407Vt	10TV, 7radio (loading varies)	2/3	30(.000)	Irdeto CA - tests (UEC 642 with card)
	OptusVision test	12.626Hz	8TV (**#9A**)	3/4	29(.473)	FTA for testing only
	Austar	12.564Hz 12.689Hz	18 TV, 8 radio (**#9B**)	3/4	29(.473)	DGT400 CA (when temporary FTA ends)
Optus B1 160E	Aurora (MPEG test)	12.377Hz	5+ TV	2/3	30(.000) [27(.500)]	N163/17X/2X, Pv9223, HS-100C
PAS-2 169E	ABC Interchange	12.646 (.638, .629)Vt	1 TV (each)	3/4	6(.980)	Pv9223, Hs100C, e3
	Telstra Bendigo	12.300Vt	3TV, 2 radio	1/2	10(.138)	Pv9223/9234, (CA)
	GWN Perth	12.265Vt	2TV, radio	1/2	16(.200)	Pv9223, 9234 (CA)
	Foxtel tests	12.714Hz	up to 6TV (**#9C**)	1/2	25(.773) 29(473)	FTA during temp. testing
#	PAS-2 feeds	12.730Hz	2TV, 1 data	2/3	6(.620)	Virtually any FTA receiver
#	Hong Kong PowerVu	4148/1002 Vt	8TV (**#12**)	2/3	24(.430)	Pv9223, HS-100C(*), N2X* (some FTA)
#	NBC Hong Kong	4093/1057Vt	5 TV(**#13**)	3/4	29(.473)	Most FTA receivers; CA soon?
	JET Singapore	3962/1188 Vt	2TV (1-Ntsc, 2-Pal)	1/2	13(.740)	Pv9223 (CA)
(avoid ch 8, 9!)	ESPN (USA)	3860/1290Vt	7TV, 2 control	7/8	26(.470)	Pv9223 (CA)
	CCTV China PwrVu	3716.5/ 1433.5 Vt	5TV (**#14**)	3/4	19(.850)	Pv9223, HS-100C, N163/17X/2X (FTA)
	TCS Singapore	4183/967Hz	2TV(**#15**)	1/2	6(.620)	Virtually any FTA receiver
#	ITJ- J.Telecom	4.174/976 Hz	1 TV	3/4	5(.632)	HS-100C
	AAR-ART//RAI	4151/999 Hz	3TV(**#16**)	3/4	5(.632)	Virtually any FTA receiver
#	Feeds	4138/1012Hz	1TV	3/4	6(.620)	HS-100C, e3
	NHK Joho	4035/1115Hz	5TV (**#16A**)	3/4	26(.470)	1CA/D9234; 2-FTA HS-100C +
#	PAS-2 feeds	3940/1210 Hz	2TV(NTSC)	2/3	6(.620)	Virtually any FTA receiver
#	NAPSA(t)4	3940/1210Vt	2+TV, 1 data	2/3	7(.498)	Virtually any FTA receiver
#	California PowerVu	3901/1249Hz	8TV (**#17**)	3/4	30(.800)	CA PV9223; FTA virtually any receiver (some with NTSC glitch)
	Disney/Aust.	3804/1346Hz	1TV	5/6	21(.093)	Pv9223 (CA)
	Discovery Singapore	3776/1374 Hz	7TV (**#18**)	3/4	21(.093)	Pv9223, HS100C, N2X (occasionally Ch. 2 FTA)
#	Service 1	3761/1389Vt		3/4	6(.110)	virtually any FTA receiver
	Satcom 1-6	3743/1407Hz	6TV	7/8	19(.465)	Pv9223(CA)
#	Unknown test	3718/1432 Hz	3TV	2/3	6(.620)	e3
I702/177E	AFRTS	4177/973 LHC	8TV, 12 radio & data (#19)	3/4	28(.000)	Pv9223 (CA)
(Taiwan feeds inactive?)	SPACE TV Systems	12.612/1312 Hz	13TV,11 radio (#20)	3/4	26(.694)	XTCCDTV200 (All but 1 [#301] now CA)

SatFACTS MPEG-2 Digital Watch: 15 July 1998 ♦ Support Data

Bird	Service	RF/IF & polar.	# Prog. Chs	FEC	Msym	Interoperable Receivers
I701/180E	TVNZ Gennet (feeds)	4195/955RHC 4186/964 4178/972 4170/980	1TV(CA) (BBC Gennet) 1TV(CA) (APTV/Tokyo+)	3/4	5(.632)	DMV,. HS100C, N17X, 2X, e3 (for non CA channels when active: not all channels active all of the time).
	Americas(radio)	4175/975LHC	3+ radio (?)	2/3	3(.680)	Receiver unknown (CA)
	TVNZ CRY	4120/1030RHC	1TV	3/4	5(.632)	(see TVNZ above)
	RFO-Canal +	4095/1055LHC	7TV, 5 rad.(#21)	3/4	27(.500)	MPEG-2, 2-CA, 3 FTA
	SPN Nauru	4081/1069RHC	1TV	3/4	4(.730)	HS-100C, e3
	Service 1	4026/1124RHC	1TV	7/8	4(.339)	Hyundai 2.25, others likely
	Unknown	3922/1228LHC	2TV (FTA)	7/8	21(.200)	reception not verified
	TVNZTL	3854/1293RHC 3844/1306		3/4	5(.632)	HS100C, e3 (now CA)
	10 Australia	3765/1385RHC	6TV	7/8	29(.900))	Hs100C, e3, Pv9223 (4ch CA)

Bouquets: **1)** Thailand UTV: (Now all CA); **2)** Thailand UTV/MCOT: (Disney, TNT/Cartoons FTA; rest CA) **3)** European Bouquet. (1) **Deutsche Welle**, (2) **MCM**, (3) **RAI International**, (4) **RTVE**, (5) **TV5 Paris**; Radio (1) **DW#1** (stereo), (2) **DW#2 & 3**, (3) **DW#4 & 5**, (4) **YLE** (left) & **RCI** (right), (5) **WRN & test**, (6) **REE**, (7) **RF#1**, (8) **RF#2**, (9) **RFI Music**, (10) **RNW**, (11) **RAI**, (12) **NN**, (13) **SRI**; **4)** STAR TV Hong Kong. (Now all CA); **5)** Eastern TV Taiwan. Now all CA except occasional (5) RockTV; **6)** STAR TV Hong Kong. Now all CA except (1) **Sky Contributions**, (2) **ESPN Contributory**; **7)** Indovision. 20 channels operating at last report, all CA; **7A)** Indonesian Bouquet: (6 terrestrial TV services **FTA** on DVS-211 receivers [transponder reaches South Pacific as well]; **8)** MegaTV operating status unknown; **9A)** Optus Vision tests, **FTA** as of10-07-98 (temporarily): (1) Odyssey, (2) Movie 1, (3) Move Extra, (4) Movie Greats, (5) MTV, (6) Sky News, (7) AFL, (8) ESPN; **9B)** Austar (temp **FTA**) (1) Fox Sports, (2) Showtime, (3) Encore, (4) TV1, (5) Arena, (6) Channel <v>, (7) Nickelodeon, (8) Discovery, (9) Fox Sports II, (10) Lifestyle, (11) Comedy Channel, (12) World Movies, (13) Announcements, (14) CMT, (15) TNT/Cartoon, (16) BBC World, (17) TVSN, (18) CNBC; 8 radio (CD stacker fed); **9C)** Foxtel tests: currently inactive. **12)** Hong Kong PowerVu. (1) CTN 1, (2) CTN II, (3) TVBI, (4) TNT/Cartoons [PAL], (5) **Ad-hoc II** [NTSC], (6)Ad-Hoc PAL (blue screen), (7) CTN III, (8) CTN IV; **13)** NBC Hong Kong. (1) **CNBC Asia**, (2) **CNBC Australia**, (3) **National Geographic** , (4) **NBC feeds**, (5) **NGS-Taiwan** ; **14)** CCTV China. (1) **CCTV4** , (2) **CCTV3** [(3) **CCTV 9**, (4) **CCTV4**, (5) **CCTV5**, (6) **CCTV8**, **(7) CCTV tests** ; **15)** TCS Singapore. (1) **TCS Test**, (2) **TCS Default** [repeats channel 1]; **16)** SCPC3. (1) ad-hoc use, (2) **AAR/ART**, (3) **RAI International; 16A)** NHK World (1) **NTSC Jap**, (2) **NTSC Eng**, (3) **PAL Jap**, (4) **PAL Eng**, (5) **NHK radio**, (6) NHK Premium **17)** California PowerVu. (1) **CMT**(NTSC), (2) **Ad-Hoc 1** (3) ART (4) **EWTN** (NTSC) global Catholic radio, ch. 2, (5) **BBC World** (NTSC), (6) **Bloomberg Financial** (NTSC), (7) Golf Channel (NTSC), (8) Animal Planet; **18)** Discovery. Now all CA except occasional (2) **Disc. default**, ; **19)** AFRTS. Up to 19 video, audio, data channels; non accessible (PowerVu CA); this is a very dangerous (Bootloader) place for D9223 receivers to be! **20)** SPACE Systems (177E, Ku) as of 10-07-98, 18 programme channels load including 301 (Thai TV5, FTA); rest CA if actually operating. **21)** RFO (feeds from France). (1) Canal +(Caledonia), (2) Canal + (Polynesia), (3) **Saudi TV**, (4) **Abu Dhabi TV**, (5) **TOM1/RFO1**, (6) **TOM2/RFO2**, (7) **TOM3/World Cup Soccer**, (8) Radio Abu Dhabi, (9) Ellibera FM, (10) Radio F1-stereo, (11) France Radio Contributions, (12) RFI France.

MPEG-2 DVB RECEIVERS: [Data here is believed accurate; we assume no responsibility for errors in this volatile area!]

AV-COMM R3100. FTA, excellent sensitivity (reviewed SF May 15, 1998). Av-Comm Pty Ltd, tel ++61-2-9949-7417.
DMV/NTL 3000. Commercial receiver available in several software formats. Skandia Electronics Pty Ltd (tel 61-3-9819-2466)
Grundig (Gng) DTR1100 (badged Panasat 630, believed no longer in production). Av-Comm Pty Ltd (tel 61-2-9949-7417)
Hyundai-TV/Com. Ceased production of HSS-100 family of IRDs in March. Still in pipeline, model HSS-100B/G (for Pacific) and HSS-100C (for China). Versions in 2.25/2.26 region were good performers, version 5.0 had tuner sensitivity and other problems. Skandia (tel 61-3-9819-2466) has version 3.11 about which nothing is known; SATECH (tel 61-3-9553-3399) has version 2.26.
Hyundai TVC3200. Irdeto, European format. Kristal Electronics (61-7-4788-8902), available July.
MediaStar D7. Supplier preloaded software known channels, V. 2.09, 2.10 from Opac Pty Ltd. (61-2-9584-1233)
Nokia "d-box" (V1.7X) suitable for C-band use. Instructions, on-screen prompts may be in German. Be careful when buying this one!
Nokia 9200/9500/9600. There are too many Nokia versions to count. The original 9500S software version 1.63 was uniquely capable of going through a satellite and locating digital transponders and placing on the menu screen the Msym. FEC and operating frequency of every digital signal found whether FTA, CA, MCPC or SCPC. Sadly, that ability is gone with newer models. Current version software within 9200/9500/9600 model numbers is 5.0 or higher. Nokia refuses to support distributors in Asia or the Pacific and users are forced to locate and purchase product through European sources. The most helpful and knowledgeable Pacific region supplier for this product is AV-COMM Pty Ltd at tel 61-2-9949-7417. (See this listing, SatFACTS April 1998 and earlier for greater detail.)
PACE DVS-211. Officially available only through Sky (racing) Australia (Bob Pankhurst tel 61-2-9451-0888].
PACE DGT400. Original Galaxy IRD, now owned by Foxtel. For status (within Australia) call HOTLINE 1300-360818.
PACE DVR-500. Apparently no longer current except through NBC to cable, broadcast affiliates; basically DGT400, has CAM ability.
Panasat 520 (Pn520), **630** (Pn630), **635** **no longer available**; spares through UEC in South Africa (fax ++27-31-593-370)
Panasonic TU-DC10/TU-DS10. Scheduled for use in Optus RABS digital conversion; Antares Electronics tel ++61-7-3205-7574
Phoenix 222. FTA including PowerVu. Exceptional graphics, ease of use. Satech (61-3-9553-3399).
Power-Com. FTA including PowerVu, NTSC and PAL. NetSat (61-2-9687-9903)
PowerVu D9223, 9225, 9234. Scientific-Atlanta (Sydney) Tel 61-2-9452-3388; BaySat (tel 64-6-843-5296), Telsat (64-6-356-2749)
Note: SA D9223 receivers are RISKY to use for enthusiast purposes because of susceptibility to software overwrite during "boot-loading" sequence. Model 9234 is currently distributed in Western Australia for GWN reception under "RTIF" subsidy programme, and for NHK Premium through SA as well as in PNG for EMTV "authorised" sites.
Praxis DigiMaster 9600 digital/analogue receiver. Available July from Kristal Electronics (tel 61-7-4788-8902)
Prosat 2102S. DVB, NTSC and PAL, menu-driven, SCART and RCA outputs. Sciteq Pty Ltd (telk 61-8-9306-3737)
SK888. From Sun Moon Star (DigiSkan) through Skandia Electronics Pty Ltd. (tel 61-3-9819-2466)
UEC 642. Irdeto equipped for Australian RABS services, will also do pay-TV Irdeto services. Nationwide Antennas (61-7-3252-2947).
YURI HSS-100C. Rebadged Hyundai, software 2.27 which is Australian created mod from V2.26. Nationwide (61-7-3252-2947)

WITH THE OBSERVERS

AT PRESS DEADLINE
GMA has increased its power on Agila 2 to maximum the satellite operator will allow - resulting in P1 signals becoming P2, P2 becoming P3 "down here" out of the footprint pattern. There is an alternative (PAS-2) Filipino choice: MPEG 1.5 ABS-CBN. Contact Patricia Daza at tel 63-2-411-1167 and fax 63-2-924-2732.

ChinaStar-1 at 87.5E is apparently into limited operation although the published footprint (right) does not suggest it will be a useful satellite source for most SatFACTS readers. Observer **David Leach** (NSW) with a 4m dish and great patience has located what he believes to be a signal from this new satellite at 3889/1261Hz (audio subcarrier 6.6 MHz). Like most Chinese satellites intended for mainland China service, design and coverage details are not widely available. European sources claim the satellite has 24 transponders on board in the standard 12 + 12 linear polarisation format. One side effect of this new satellite: Singapore based STW-1 has been scheduled to 88E with a third quarter scheduled launch, now delayed while they sort through their options since ChinaStar beat them to the orbit position.

CHINASAT-1
87.5 E° 272.5 W°

EIRP
Beam Center 31.5 dBW
1st Contour 29.5 dBW
2nd Contour 28.5 dBW
3rd Contour 27.5 dBW

Of perhaps greater interest, Sinosat-1 has been delivered to the Xichang Satellite Launch Centre with a possible launch anytime after July 14th to 110E. This satellite claims 24 C-band and 14 Ku-band transponders at power levels comparable to AsiaSat 3. The satellite operators have begun actively marketing service to non-Chinese firms (*"covering China and neighbouring countries"*) and we expect footprint maps to be published shortly after launch. Test signals should be possible two weeks after the launch. The satellite was designed and built by French Aerospatiale.

Observer **Garry Beal** (Canberra) reports Satellite Music Australia operating on Optus B3, 12.407 Vt with Msym 3.000 and FEC 2/3 on 90cm offset dish. This service took delivery of 240 UEC 642 IRDs for their commercial customers during June. Beal also reports Thai TV continues to be FTA on I177E at 12.612Vt with Msym 26.694 and FEC 3/4.

Observer **Robert Skilton** (NZ) confirms status of Space TV Systems programme loading as of mid-June. He loads 18 programme channels with 201 - 207 apparently Chinese commercial or cable channels, 301 is FTA Thai TV service, 501 - 510 are radio only service channels while 3801 and 3804 are forbidden fruit North American "adult" services. Exact commercial status of this package remains a mystery, as does actual content of service (a receiver that loads channels does not verify that there is actually programming present, except in the FTA case of Thai TV5).

Casualty
Tonight
9.30
UK·TV

UK·TV, one of up to 6 Foxtel cable TV service channels briefly visible through PAS-2 during June tests.

Several observers report rechannelling of Star TV packages on AsiaSat 2; the 3700Vt transponder appears to have been dropped for the time being, although 3744 and 3900Vt between them now load as many as 19 programme channels. all CA. Load 3744 at 26.845, FEC 7/8. Advisory from Star TV suggests their Star News India may return to FTA format

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for August 15th issue: August 3 by mail (use form appearing page 34), or 5PM NZT August 4th if by fax to 64-9-406-1083.

on AsiaSat 2 August 1; service was previously on 3740/1410Vt before switching off in favour of present digital package late in May.

Observer **Richard Brooks** reports on a new "MediaCast" PC card designed to process digital TV services through a Pentium quality PC from American firm Comstream. Price is $US650, additional data from fax ++(USA) 1-619-657-5897.

Discovery's Animal Planet is now running (CA) as programme channel 8 within California bouquet of PAS-2 (3901Hz). Service promoted itself for ten days leading up to June 26th start in FTA format. Discovery is in process of creating several new "splinter" channels of specialised information; due for European and North American launch late in July are "Wings" and "Health Channel." Status of these additional service channels in Pacific is not announced although "Animal Planet" was introduced to compete with National Geographic Channel Asia service now found on ex-NBC Asia transponder on PAS-2.

Observer **Brendon Bell** (Hawkes Bay, NZ) reports finding video tests accompanied by horse racing audio on Optus B1 NZ beam of 12.392Vt late in June. This transponder is frequently used for sport and other feeds into NZ from Australian sources. **Stu McLeod** (NZ) found "Rural Health Education Foundation" testing on Optus B1, 12.730Vt with P5 test card on 1.2m Hydro dish.

Observer **Craig Julian** (New Plymouth, NZ) found Foxtel PAS-2 Ku tests producing "excellent pictures" on 90cm dish.

Observer **Danny Deng** has XSAT IRD with authorised Taiwan Space TV smart card available for private sale; contact Satellite TV Services Ltd. at 64-9-827-4838.

Stu McLeod (NZ) reports PAS-2 Ku 12.670Vt signal that appears to have Msym of 5.956 and FEC of 3/4 but no usable data stream. Anyone have any clues as to this one? Stu also finds PAS-2 C-band 3940/1210 with Msym of 7.398 and FEC of 3/4 carrying several programme channels FTA including BBC World service; and, 3761/1389Vt with identifier of "Service 1." Over on I180, he finds 4026/1124 RHC (Msym 4.339, FEC 7/8) with "Service 1" colour bars while on 4014/1136 RHC at 3.700 and 5/6 "Universal Link."

US major league baseball games, apparently being fed to Fox Sports in Australia, noted FTA on I177 at 4178/972 RHC.

PAS-4, FTA PAL analogue: Maharishi Veda Vision on 3932/1218Hz from 13.30-16.30 UTC daily.

Thaicom 3 testing from ATN on 3476/1674Vt, RAJ testing 3495/1655Vt; both FTA PAL.

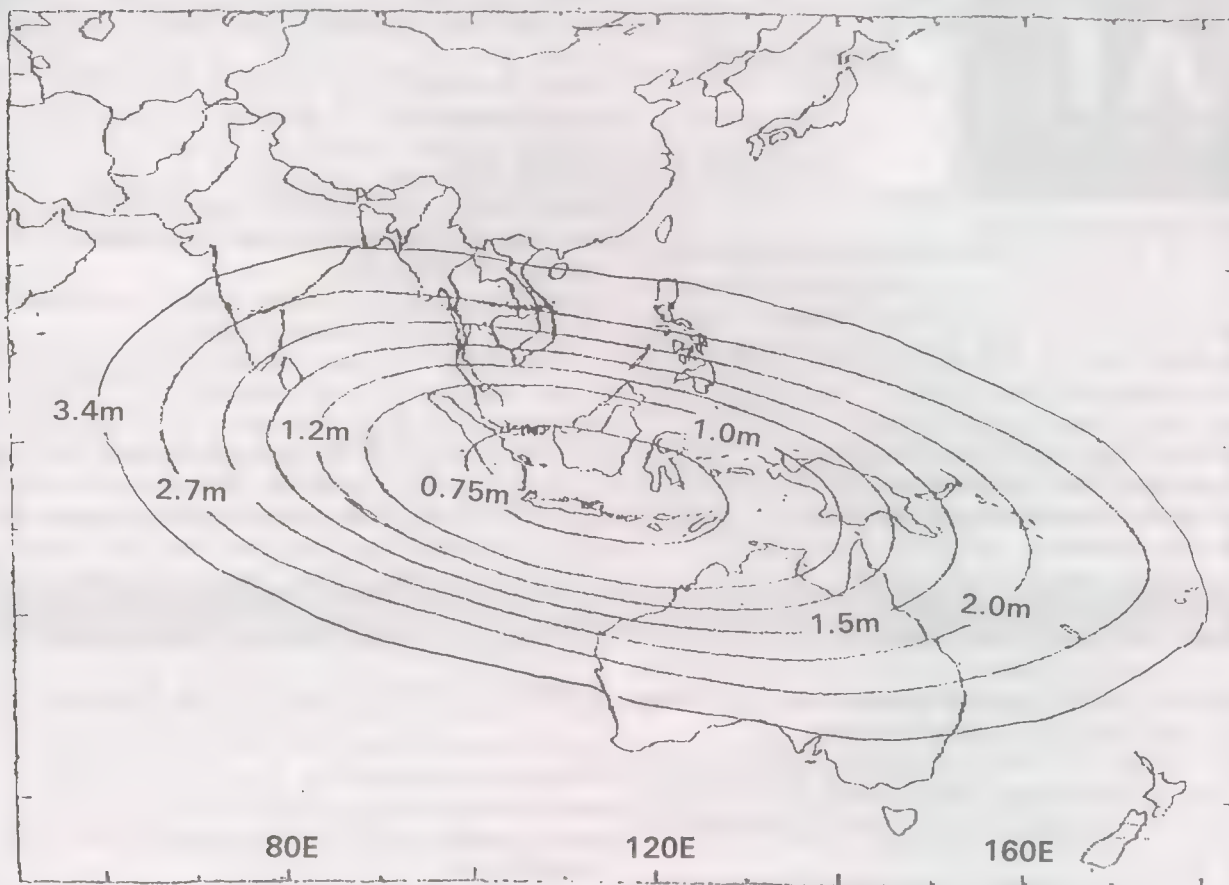
Observer **Brett Nosse** (Qld) corrects our June listing of Optus Vision tests; should have been listed as 12.626 while Austar is using 12.564 (Hz); we had them reversed.

Herbalife twice weekly feeds on PAS-2 Ku have moved to Optus B1 12.394Vt (audio 6.6, J17, 380 kHz bandwidth). Herbalife use of this PAS-2 transponder conflicted with tests underway by Foxtel earlier in June; Foxtel testing on PAS-2 Ku has been reported for periods of up to a few hours with modified 29.473 and FEC 3/4 as recently as first few days of July. A further transponder move for Herbalife is rumoured for later this year. Back on PAS-2 C-band, Herbalife is testing Wednesdays 21.00-21.30 HKT on 3780/1370Vt in PAL: Thai audio 6.20 and English 6.80.

RFO Web Site at http://www.rfo.fr/rfo-sat/.

Optus (Australia) test card seen on PAS-2 3780/1370 and 3790/1360Vt with audio on 6.8; this is normally an itinerant feed frequency for North American feeds.

Baccarat Game Channel back on 4028RHC on I180, Msym 2.702, FEC 5/6 MPEG-2 FTA..

Minimum diameter of INDOSTAR S-Band User Terminal (107.5E)

Note: Suggested minimum dish size based upon extrapolated pre-launch coverage expected; not from actual results at this time.

AT Sign-off

Running The Gauntlet at UEC

During the past 45 days, South African IRD supplier UEC has been faced with what some would consider an impossible challenge. Because they were the first IRD firm to get the official nod of approval from the engineering department at Optus Communications, they became a target of anyone and everyone who wanted a piece of the Optus RABS (and perhaps pay-TV) action. Their IRD was accused of having power supply RFI problems, of generating too much heat for safe operation at remote sites, of radiating unwanted signals on spurious frequencies. Detractors have called the IRD "*slow to programme and insensitive.*" And there are suggestions the 642 has been a maintenance problem for servicing agents when used elsewhere in the world. Moreover, we did not help their cause by publishing a photo on page 18 in June suggesting someone could accidentally come in contact with the 240 volt mains line.

The reality turns out to be quite different from the less than favourable word of mouth reports we understand are making the rounds. We attempt to set the record straight beginning on page 6 in this issue.

UEC is in a difficult business spot. Durban, South Africa is not exactly Silicon Valley and while information now circles the globe at the speed of light, these guys are at a disadvantage. It is not their inability to be innovative nor their second hand access to the latest chip or circuit design data that inhibits. Rather, it is the world's perception that a South African company cannot be a world leader in cutting edge technology.

Corporate stability is directly related to national stability. Devaluation of the South African unit of currency, the Rand, is a daily corporate problem. Corporate managers who require armed guards to travel to work and back home again have a difficult time focusing while at work on the challenges of leading edge technology. If you worked in an atmosphere where a crazy could come in off the street armed to the teeth and blow away the lady sitting next to you before putting a weapon to his own head and pulling the trigger, you'd have a difficult time concentrating too.

Quality Manager Russell Futter, in dealing with our genuine concerns about the integrity of the 642 IRD, makes the point, "*30,000 of the 642 model IRDs have been installed in Africa and Greece since January (1998). To date 50 IRDs have been returned to the factory for warranty repair. Of the 50 returned only 9 units had genuine faults; the remaining 41 were no fault found or traced to installation faults (such as LNB power turned off on the menu, or use with an incorrectly designed SCART cord). I do not believe these statistics reflect any single weakness in the 642 reliability. The performance of the front end, called into question by some, is in fact far superior to any opposition IRD; a fact you can verify by talking with Darryl Drake at Optus.*"

That UEC would direct us to the Project Manager - Technical Development for Aurora (Darryl Drake) to verify the performance of the 642 is a measure of the intense pressure they are feeling. Drake has already "spoken" by placing his signature on a slip of paper advising Optus corporate management he has tested and approved the 642 for RABS service. To expect him to now defend his decision is asking a bit much. He is paid to be right the first time because Optus - the corporation - cannot afford to be wrong about something as straight forward as selecting a suitable IRD for the RABS project.

UEC was also hit by our June report that single-chip IRDs are coming. Soon. At reduced pricing.

"*Single chip IRDs are all smoke and mirrors*" claims Futter. "*Yes, there are single chips available, some are even in working IRD form. But none as of yet will do Irdeto conditional access management.*" Translation? If Futter is correct, single chip products for pay-TV (as opposed to free to air TV) will be a year or more coming because the first generation of one-chip processors were not designed to incorporate conditional access. Equally important - let us not lose sight of where the benefits will be for single chip processing solutions. Yes, they will use less electricity (Futter advises the 642 uses only 18 watts at present, assuming a draw of 160 mA for the LNB). Yes, they will create less heat but in an environment of 26C where the 642 cabinet temperature measures less than 37C at the hottest spot (directly over the power supply), isn't the heat challenge now largely resolved? (IRDs will always require open ventilation, at least on top.)

Finally there is the service aspect. We first showed concern for backup in field service on this page in March. Our concerns - then and now - that if only a handful (such as a few thousand) of a particular brand or model are sold for the RABS project, there will be very little incentive for the manufacturer to put into place a suitable field service group. Our April AT Sign-off recorded the words of Francois Stols, UEC Managing Director stating, "*UEC will be contracting with Australian companies ... for technical and product support.*"

This update (July 2) from Russell Futter. "*The service infrastructure in place begins at the first level with a telephonic trouble shooting line to screen out no fault found and installation problems, The second level is distributor /installer support programme - such as fixing the installation or screening the IRD to remove finger type problems. Third - a PC board repair service through a Sydney based facility. All warranty repairs will be processed through Nationwide Antenna Systems. UEC have specified and will monitor the performance of the infrastructure with respect to turn around times, the holding of spares and technical support. We place great importance on the after sales support of our product, both during and after the warranty period.*"

Out of the first 1,082 UEC 642s to arrive in Australia, 240 went to Satellite Music Australia for their background music delivery service. The majority of the balance are slowly going into the RABS replacement market which Optus has now expanded to 17 channels of programming on the vertical side of B3 (10 TV, 7 radio service channels). Not very much about RABS has gone well to date and there are signs the analogue B-MAC services will still be on the air at Christmas. The lesson here is that nothing about digital works properly when you want nor for the price you were quoted.

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VISA/Mastercard expiration date ______________

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OBSERVER REPORTING FORM - Due AUGUST 3, 1998

• NEW programming sources seen since July 1st: ______

• Changes (signal level, transponder, programming content) in pre-existing programming sources since July 1st: ______

• OTHER (including changes in your receiving system): ______

NOTE: Please use P1 - P5 code when describing signal levels and receiver IF/RF settings.

Your Name ______
Town/City ______
Make/size dish ______ LNB ______ Receiver ______

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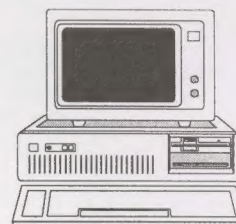
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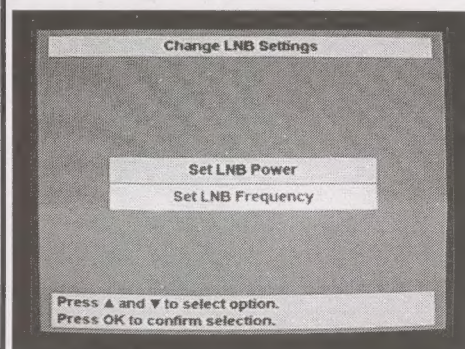
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